Certificate HK07/01191.00

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2F, No.240, Sec.1, Nei Hu Road, Taipei, Taiwan 114, R.O.C
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ISO 9001:2000

For the following activities

Design and Sales of Mainboards, Personal Computers, Notebooks, and Peripheral Cards;
Design and Manufacturing of Mainboards and Peripheral Cards.

Further clarifications regarding the scope of this certificate and the applicability of ISO 9001:2000 requirements may be obtained by consulting the organization

This certificate is valid from 16 March 2007 until 15 March 2010
Issue 1. Certified with SGS since March 2007

Multiple certificates have been issued for this scope
The main certificate is numbered HK07/01191.00

Authorised by

P. Earl

SGS United Kingdom Ltd Systems & Services Certification
Rossmore Business Park Ellesmere Port Cheshire CH65 3EN UK
t +44 (0)151 350-6666 f +44 (0)151 350-6600 www.sgs.com

Certificate No.

PRC-HSPM-1172

Issued: July 10, 2007
Revision: N/A
Expiration: July 09, 2010

IECQ Certificate of Hazardous Substance Process Management (HSPM)

applicable to the European Directive 2002/95/EC ("RoHS") requirements.

The Supervising Inspectorate (SGS-CSTC Standards Technical Services Co., Ltd.), sponsored by the United States National Authorized Institution, ECCB certify that

ECS Manufacturing (Shenzhen) Co., Ltd.
No. 20 & 26 (except 1F, 2F & 3F),
Free Trade Zone, Shatoujiao,
Shenzhen, Guangdong Province, P.R. China

Has developed and implemented Hazardous Substances Process Management, procedures, and related processes in compliance with the applicable requirements for HSPM organization approval which is in accordance with the Basic Rules IECQ-01 and Rules of Procedure QC 001002-5 "IECQ Hazardous Substance Process Management" of the IEC Quality Assessment System for Electronic Components (IECQ), and with respect to the Specification QC 080000 IECQ HSPM.

This certification is applicable to all electronic components and related materials and processes for the

Design and manufacture of Mainboards and Peripheral Cards.

Issued by Certification Authorities:

Electronic Component Certification Board

Signed:

Stanley H. Salot Jr. – President, ECCC
ECCB
PO Box 9041
Midland, Texas 79708
Tel: (432) 697-9970 Fax: (866) 260-6181
Web Site: www.eccb.org

SGS-CSTC Standards Technical Services Co., Ltd
16F Century YuHui Mansion
73 Fucheng Road
Beijing, China
Web Site: www.sgs.com

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Preface

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Version 1.0B

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This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and the receiver
- Connect the equipment onto an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Shielded interconnect cables and a shielded AC power cable must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.

Declaration of Conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation

Canadian Department of Communications

This class B digital apparatus meets all requirements of the Canadian Interference-causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Réglement sur le matériel brouilieur du Canada.

About the Manual

The manual consists of the following:

Chapter 1

Introducing the Motherboard

Describes features of the motherboard.

Go to ⇨ page 1

Chapter 2

Installing the Motherboard

Describes installation of motherboard components.

Go to ⇨ page 7

Chapter 3

Using BIOS

Provides information on using the BIOS Setup Utility.

Go to ⇨ page 25

Chapter 4

Using the Motherboard Software

Describes the motherboard software

Go to ⇨ page 43

Chapter 5

ATI Crossfire™ Technology Support

Describes the ATI Crossfire™ Technology

Go to ⇨ page 49

Chapter 6

Intel® Matrix Storage Manager RAID Configurations

Describes the Intel® Matrix Storage Manager RAID Configurations

Go to ⇨ page 53

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Chapter 1
Introducing the Motherboard

Introduction

Thank you for choosing the X58B-A motherboard. This motherboard is a high performance, enhanced function motherboard designed to support the LGA1366 socket Intel® Core™ i7 processor for high-end business or personal desktop markets.

The motherboard incorporates the Intel X58 Northbridge (NB) and Intel ICH10R Southbridge (SB) chipsets. The Northbridge supports Intel® QuickPath Interconnect (Intel® QPI) of 4.8 GT/s to 6.4 GT/s supporting different routing lengths. The memory controller supports DDR3 memory DIMM frequencies of 1333/1066/800. It supports six DDR3 sockets with up to maximum memory of 24 GB. DDR3 Maximum memory bandwidth of 32 GB/s in triple-channel symmetric mode assuming DDR3 1333 MHz. High resolution graphics via two PCI Express slots, intended for Graphics Interface, is fully compliant to the PCI Express Base Specification revision 2.0. Additionally, one PCI Express x4 slot is supported, fully compliant to the PCI Express Base Specificaiton revision 2.0 as well. It supports the ATI CrossFire™ Technology that allows you to install GPU graphics cards.

The ICH10R Southbridge on this motherboard supports one PCI slot which is PCI v2.3 compliant. In addition, two PCI Express x1 slot is supported, fully compliant to the PCI Express Base Specification revision 1.1. It implements an EHCI compliant interface that provides 480 Mb/s bandwidth for twelve USB 2.0 ports (six USB ports and three USB 2.0 headers support additional six USB ports). The Southbridge supports six SATA ports with maximum transfer rate up to 3.0 Gb/s each. It supports Intel® Matrix Storage Technology, providing both AHCI and RAID 0, 1, 5 and 10 configuration.

The motherboard is equipped with advanced full set of I/O ports in the rear panel, including PS/2 mouse and keyboard connectors, one CLR_CMOS button, two eSATA ports, one 1394a port, two LAN ports, six USB ports, one optical SPDIFO port and audio jacks for microphone, line-in and 8-ch line-out. Additionally, one Heat pipe heat sink is supported for NB, CPU & SB heat dissipation.

In addition, this motherboard comes with an LED for debug, a power on button, a reset button and a CLR_CMOS button. The processor can be overclocked when *CPU Over-clocking Func.* is set to *Enabled* in M.I.B (MB Intelligent BIOS).

Feature

Processor

The motherboard uses an LGA1366 type of Intel® Core™ i7 processor that carries the following features:

- Accommodates Intel® Core™ i7 processor
- Intel® QuickPath Interconnect (Intel® QPI) of 4.8 GT/s to 6.4 GT/s supporting different routing lengths

Chipset

The X58 Northbridge (NB) and ICH10R Southbridge (SB) chipsets are based on an innovative and scalable architecture with proven reliability and performance.

X58 (NB)

- One full width Intel® QPI (QuickPath Interconnect) link interface
- Packetized protocol with 18 data/protocol bits and 2 CRC bits per link per direction, 4.8 GT/s to 6.4 GT/s suporting different routing lengths
- Support for 64-byte cacheline size
- Two x16 PCI Express Gen2 ports each supporting up to 8 GB/s direction peak bandwidth
- An additional x4 PCI Express Gen2 port configuration to 2 x2 interface

ICH10R (SB)

- Enhanced DMA Controller, interrupt controller, and timer functions
- Compliant with PCI Express Base Specification, revision 1.1
- Compliant with PCI v2.3 specificaiton
- Compliant with SATA 3.0 Gb/s Host Controller
- Integrated USB 2.0 Host Controller supporting up to twelve USB 2.0 ports
- Supports Intel® Matrix Storage Technology, providing both AHCI and RAID 0, 1, 5 and 10 configuration

Memory

- Supports DDR3 1333/1066/800 DDR3 SDRAM with Triple-channel architecture
- Accommodates six unbuffered DIMMs
- Up to 4 GB per DIMM with maximum memory size up to 24 GB
- Supports 1 Gb, 2 Gb and 4 Gb DDR3 DRAM technologies for x8 and x16 devices (It is not recommended to use 512 Mb DDR3 memory device on this motherboard)

Audio

- Compliant with Intel High Definition Audio Codec
- 7.1 channel audio CODEC

Onboard LAN

- Dual Realtek Giga LAN Controller

Expansion Options

The motherboard comes with the following expansion options:

- Two PCI Express x16 slots for Graphic Interface
- One PCI Express x4 slot
- Two PCI Express x1 slots
- One 32-bit PCI v2.3 compliant slot
- Six 7-pin SATA connectors

1394a Fire Wire

- Compliant with single chip host controller for IEEE Std 1394-1995 and IEEE 1394a-2000
- Integrated 400 Mb/s 2-Port PHY for the PCI BUS
- 3.3V Power supply with 5V Tolerant Inputs

Integrated I/O

The motherboard has a full set of I/O ports and connectors:

- Two PS/2 ports for mouse and keyboard
- One Heat pipe heat sink for NB, CPU & SB heat dissipation
- One CLR_CMOS button
- Two eSATA ports
- One 1394a port
- Two LAN ports
- Six USB ports
- One optical SPDIFO port
- Audio jacks for microphone, line-in and 8-ch line-out

BIOS Firmware

This motherboard uses AMI BIOS that enables users to configure many system features including the following:

- Power management
- Wake-up alarms
- CPU parameters
- CPU and memory timing
- ECS M.I.B. BIOS

The firmware can also be used to set parameters for different processor clock speeds.

1. Some hardware specifications and software items are subject to change without prior notice.

2. Due to chipset limitation, we recommend that motherboard be operated in the ambiance between 0 and 50 °C.

Specifications

CPU	•	LGA1366 socket for latest Intel® Core™ i7 processor
	•	Intel® QuickPath Interconnect (Intel® QPI) of 4.8 GT/s to 6.4 GT/s supporting different routing lengths
Chipset	•	Intel X58 & ICH10R
	•	North Bridge: Intel X58
	•	South Bridge: Intel ICH10R
Memory	•	Triple-channel DDR3 memory architecture
	•	6 x 240-pin DDR3 DIMM sockets support up to 24 GB
	•	Supports DDR3 1333/1066/800 DDR3 SDRAM
Expansion Slots	•	2 x PCI Express Gen2 x16 slots
	•	2 x PCI Express x1 slots
	•	1 x PCI Express x4 slot
	•	1 x PCI slot
Storage	•	Supported by Intel ICH10R
	•	6 x Serial ATA 3.0 Gb/s Host Controllers
	•	Supports RAID 0, 1, 5 and 10
	•	Support by JMicron® JMB362
	•	2 x eSATA 3.0 Gb/s devices
Audio	•	Realtek ALC 888S supports 7.1 channel HD audio
Giga LAN	•	Dual Realtek 8111C PCIE GigaLAN Controller
Heat Pipe	•	1 x ECS QoolTech™ II Heat Pipe
Rear Panel I/O	•	1 x PS/2 keyboard & PS/2 mouse connector
	•	1 x CLR_CMOS button
	•	2 x eSATA ports
	•	1 x 1394a port
	•	6 x USB ports
	•	2 x RJ45 LAN connectors
	•	1 x Audio port (1 Line in, 4 x Line out, 1 Optical SPDIF Out)
Internal I/O Connectors & Headers	•	1 x 24-pin ATX Power Supply connector, 8-pin 12V connector & ATX4P connector
	•	6 x Serial ATA connectors
	•	3 x USB 2.0 headers support additional 6 USB ports
	•	1 x Clear CMOS header
	•	1 x Front panel header
	•	1 x PWR & RST button
	•	1 x Front panel 1394a header
	•	1 x COM header
	•	1 x SPDIF out header
	•	1 x Front panel audio header
	•	1 x CD_in header
	•	CPU_FAN/SYS_FAN/PWR_FAN/NB_FAN connectors
System BIOS	•	AMI BIOS with 16Mb SPI ROM
	•	Supports Plug and Play 1.0A, APM 1.2, Multi Boot, DMI
	•	Supports ACPI revision 1.0 specification
Form Factor	•	ATX Size, 305mm x 244mm

Motherboard Components

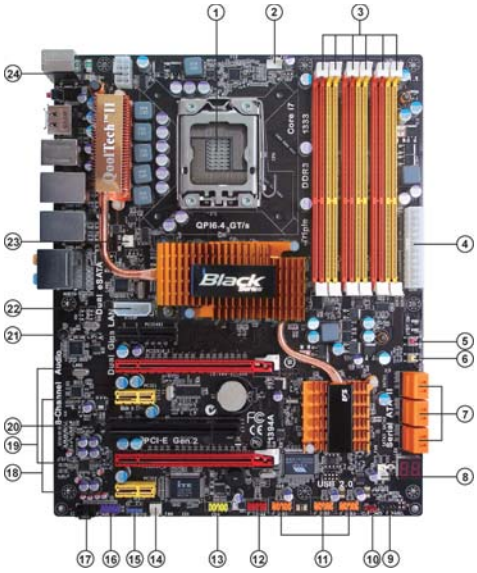


Table of Motherboard Components

LABEL	COMPONENTS
1. CPU Socket	LGA1366 socket for Intel® Core™ i7 processor
2. CPU_FAN	CPU cooling fan connector
3. DDR3_1~6	240-pin DDR3 SDRAM slots
4. ATX_POWER	Standard 24-pin ATX power connector
5. PWR_BTN	Power on button
6. RST_BTN	Reset button
7. SATA1~6	Serial ATA connectors
8. SYS_FAN	System cooling fan connector
9. F_PANEL	Front panel switch/LED header
10. CLR_CMOS	Clear CMOS jumper
11. F_USB1~3	Front panel USB headers
12. F_1394A	Onboard 1394a header
13. COM	Onboard serial port header
14. PWR_FAN	Power cooling fan connector
15. SPDIFO	SPDIF out header
16. F_AUDIO	Front panel audio header
17. CD_IN	Analog audio input connector
18. PCIE1~2	PCI Express x1 slots
19. PCIEX16_1 PCIEX16_2	PCI Express slots for graphics interface
20. PCI	32-bit add-on card slot
21. PCIE4X1	PCI Express x4 slot
22. ATX4P	Auxiliary power connector for graphics card
23. NB_FAN	Northbridge cooling fan connector
24. ATX12V	8-pin +12V power connector

This concludes Chapter 1. The next chapter explains how to install the motherboard.

Memo

Chapter 2
Installing the Motherboard

Safety Precautions

- Follow these safety precautions when installing the motherboard
- Wear a grounding strap attached to a grounded device to avoid damage from static electricity
- Discharge static electricity by touching the metal case of a safely grounded object before working on the motherboard
- Leave components in the static-proof bags they came in
- Hold all circuit boards by the edges. Do not bend circuit boards

Choosing a Computer Case

There are many types of computer cases on the market. The motherboard complies with the specifications for the ATX system case. Some features on the motherboard are implemented by cabling connectors on the motherboard to indicators and switches on the system case. Make sure that your case supports all the features required.

Most cases have a choice of I/O templates in the rear panel. Make sure that the I/O template in the case matches the I/O ports installed on the rear edge of the motherboard.

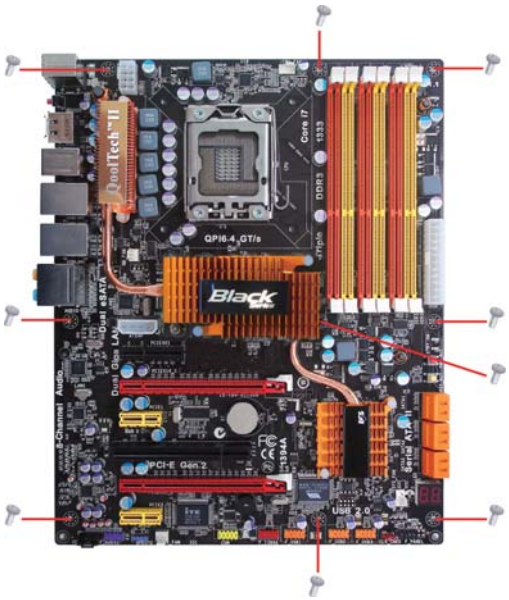
This motherboard carries an ATX form factor of 305 x 244 mm. Choose a case that accommodates this form factor.

Installing the Motherboard in a Case

Refer to the following illustration and instructions for installing the motherboard in a case.

Most system cases have mounting brackets installed in the case, which correspond the holes in the motherboard. Place the motherboard over the mounting brackets and secure the motherboard onto the mounting brackets with screws.

Ensure that your case has an I/O template that supports the I/O ports and expansion slots on your motherboard.



Do not over-tighten the screws as this can stress the motherboard.

Checking Jumper Settings

This section explains how to set jumpers for correct configuration of the motherboard.

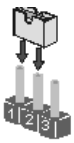
Setting Jumpers

Use the motherboard jumpers to set system configuration options. Jumpers with more than one pin are numbered. When setting the jumpers, ensure that the jumper caps are placed on the correct pins.

The illustrations show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN.

SHORT **OPEN**

This illustration shows a 3-pin jumper. Pins 1 and 2 are SHORT.



Checking Jumper Settings

The following illustration shows the location of the motherboard jumpers. Pin 1 is labeled.

Jumper Settings

Jumper	Type	Description	Setting (default)	
CLR_CMOS	3-pin	Clear CMOS	1-2: NORMAL 2-3: CLEAR CMOS Before clearing the CMOS, make sure to turn off the system.	1 CLR_CMOS

To avoid the system unstability after clearing CMOS, we recommend users to enter the main BIOS setting page to "Load Default Settings" and then "Save and Exit Setup".

Installing Hardware

Installing the Processor

Caution: When installing a CPU heatsink and cooling fan make sure that you DO NOT scratch the motherboard or any of the surface-mount resistors with the clip of the cooling fan. If the clip of the cooling fan scrapes across the motherboard, you may cause serious damage to the motherboard or its components.

On most motherboards, there are small surface-mount resistors near the processor socket, which may be damaged if the cooling fan is carelessly installed.

Avoid using cooling fans with sharp edges on the fan casing and the clips. Also, install the cooling fan in a well-lit work area so that you can clearly see the motherboard and processor socket.

Before installing the Processor

This motherboard automatically determines the CPU clock frequency and system bus frequency for the processor. You may be able to change the settings in the system Setup Utility. We strongly recommend that you do not over-clock processors or other components to run faster than their rated speed.

Warning:

1. Over-clocking components can adversely affect the reliability of the system and introduce errors into your system. Over-clocking can permanently damage the motherboard by generating excess heat in components that are run beyond the rated limits.

2. Always remove the AC power by unplugging the power cord from the power outlet before installing or removing the motherboard or other hardware components.

This motherboard has an LGA1366 socket. When choosing a processor, consider the performance requirements of the system. Performance is based on the processor design, the clock speed and system bus frequency of the processor, and the quantity of internal cache memory and external cache memory.

Fail-Safe Procedures for Over-clocking

When end-users encounter failure after attempting over-clocking, please take the following steps to recover from it.

1. Shut down the computer.

2. Press and hold the “Page Up Key (PgUp)” of the keyboard, and then boot the PC up.

3. Two seconds after the PC boots up, release the “Page Up Key (PgUp)”.

4. The BIOS returns to the default setting by itself.

CPU Installation Procedure

The following illustration shows CPU installation components.

A. Opening of the Load Plate
· Put your thumb on the tail of the load plate and press the tail down.
· Rotate the load plate to fully open position.

B. Disengaging of the Load Lever
· Hold the hook of lever and pull it to the left side to clear retention tab.
· Rotate the load lever to fully open position.

C. Removing the Cap
· Be careful not to touch the contact at any time.

D. Inserting the Package
· Grasp the package. Ensure to grasp on the edge of the substrate.
· Make sure pin 1 indicator is on your bottom-left side.
· Aim at the socket and place the package carefully into the socket by purely vertical motion.

E. Closing the Load Plate
· Rotate the load plate onto the package IHS (Intergraded Heat Spreader).
· Engage the load lever while pressing down lightly onto the load plate.
· Secure the load lever with the hook under retention tab.

F. Fasten the cooling fan supporting base onto the CPU socket on the motherboard.

G. Make sure the CPU fan is plugged to the CPU fan connector. Please refer to the CPU cooling fan user's manual for more detail installation procedure.

1. To achieve better airflow rates and heat dissipation, we suggest that you use a high quality fan with 3800 rpm at least. CPU fan and heatsink installation procedures may vary with the type of CPU fan/ heatsink supplied. The form and size of fan/heatsink may also vary.

2. DO NOT remove the CPU cap from the socket before installing a CPU.

3. Return Material Authorization (RMA) requests will be accepted only if the motherboard comes with the cap on the LGA1366 socket.

Installing Memory Modules

This motherboard accommodates four memory modules. It can support six 240-pin DDR3 1333/1066/800. The total memory capacity is 24 GB.

DDR3 SDRAM memory module table

Memory module	Memory Bus
DDR3 800	***400 MHz***
DDR3 1066	***533 MHz***
DDR3 1333	***667 MHz***

You must install at least one module in any of the six slots. Each module can be installed with 4 GB of memory; total memory capacity is 24 GB.

The six DDR3 memory sockets (DDR3_1, DDR3_2, DDR3_3, DDR3_4, DDR3_5, DDR3_6) are divided into three channels and each channel has two memory sockets as following:

- Channel A: DDR3_1, DDR3_2
- Channel B: DDR3_3, DDR3_4
- Channel C: DDR3_5, DDR3_6

Recommend memory configuration

Mode	Sockets					
	DDR3_1	DDR3_2	DDR3_3	DDR3_4	DDR3_5	DDR3_6
2 DIMMs	-	Populated	-	Populated	-	-
3 DIMMs	-	Populated	-	Populated	-	Populated
4 DIMMs	Populated	Populated	-	Populated	-	Populated
6 DIMMs	Populated	Populated	Populated	Populated	Populated	Populated

Due to Intel CPU spec definition, the system will not boot if only one DIMM is installed in DDR3_1, DDR3_3, or DDR3_5. Follow the table above for recommended memory configuration.

1. For best performance and compatibility, we recommend that users give priority to the yellow DIMMs (DDR3_2/DDR3_4/DDR3_6) when installing DIMMs.

2. We suggest users not mix memory type. It is recommended to use the same brand and type memory on this motherboard.

Do not remove any memory module from its antistatic packaging until you are ready to install it on the motherboard. Handle the modules only by their edges. Do not touch the components or metal parts. Always wear a grounding strap when you handle the modules.

Installation Procedure

Refer to the following to install the memory modules.

1. This motherboard supports unbuffered DDR3 SDRAM .
2. Push the latches on each side of the DIMM slot down.
3. Align the memory module with the slot. The DIMM slots are keyed with notches and the DIMMs are keyed with cutouts so that they can only be installed correctly.
4. Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.
5. Install the DIMM module into the slot and press it firmly down until it seats correctly. The slot latches are levered upwards and latch on to the edges of the DIMM.
6. Install any remaining DIMM modules.

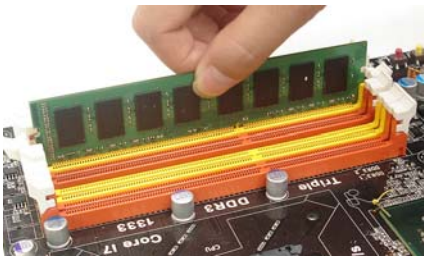


Table A: DDR3 (memory module) QVL (Qualified Vendor List)

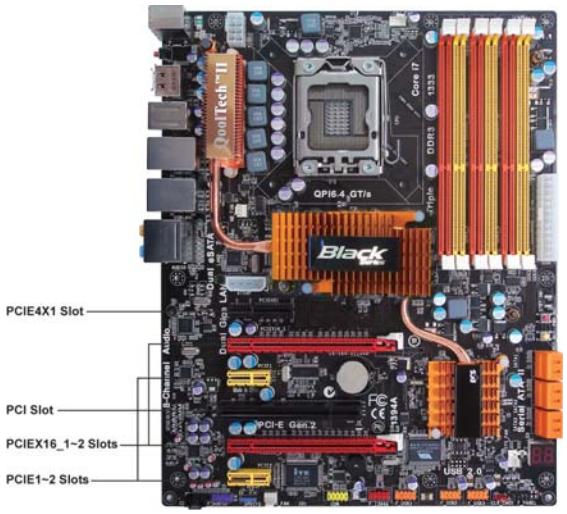
The following DDR3 1333/1066/800 memory modules have been tested and qualified for use with this motherboard.

Type	Size	Vendor	Module Name
DDR3 800	1 GB	HYNIX	PC3-6400U-6-00
DDR3 1066	1 GB	A-data	M3OSS3H3I3120B5Z/Boxed
		Aeneon	AEH760UD00-10FA98X
		Corsair	CM3X1024-1066C7/Boxed
		Hynix	HMT112U6AFP8C-G7N0 AA
		Kingston	KVR1066D3N7/1G
		Micron	MT8JTF12864AY-1G1D1
		Qimonda	IMSH1GU03A1F1C-10F B2S81427023
			IMSH1GU03A1F1C-10G B2S81427034
		Samsung	Gold Bar M378B2873DZ1-CF8 0818
			M378B2873DZ1-CF8 0842
	2 GB	Elixir	M2F2G64CB8HA4N-BE
		Hynix	HMT125U6AFP8C-G7N0 AA
			HYMT125U64ZNF8-G8 AA
		Kingston	KVR1066D3N7/2G 1.5V 9905403-006.A00LF
		Micron	MT16JTF25664AY-1G1D1
		Qimonda	IMSH2GU13A1F1C-10F B3S81427044
			IMSH2GU13A1F1C-10G B3S81528005
			IMSH2GU13A1F1C-13H B3S81124001
		Samsung	M378B5673DZ1-CF8 0842
	4 GB	Samsung	M378B5273BH1-CF8 0840
DDR3 1333	1 GB	Aeneon	AXH760UD00-13GA98X
		Corsair	CM3X1024-1333C9DHX/Boxed
		Hynix	HMT112U6AFP8C-H9N0 AA
		Kingston	KVR1333D3N9
		Qimonda	IMSH1GU13A1F1C-13H
		Samsung	M378B2873DZ1-CH9
	2 GB	A-DATA	M3OSS6H3J4130E1C5Z
		Hexon	ELPH8AUDR-13M88
		Hynix	HMT125U6AFP8C-H9N0 AA
		Kingston	KVR1333D3N9K2/2G
		Qimonda	IMSH2GU13A1F1C-13H B3S81124001
		Samsung	M378B5673DZ1-CH9 0842
DDR3 1600	1 GB	Kingston	KHX12800D3K3/3GX

Expansion Slots

Installing Add-on Cards

The slots on this motherboard are designed to hold expansion cards and connect them to the system bus. Expansion slots are a means of adding or enhancing the motherboard's features and capabilities. With these efficient facilities, you can increase the motherboard's capabilities by adding hardware that performs tasks that are not part of the basic system.



PCIE4X1 Slot The PCI Express x4 slot is fully compliant to the PCI Express Base Specification revision 2.0.

PCI Slot This motherboard is equipped with one standard PCI slot. PCI stands for Peripheral Component Interconnect and is a bus standard for expansion cards, which for the most part, is a supplement of the older ISA bus standard. The PCI slot on this board is PCI v2.3 compliant.

PCIEX16_1/ PCIEX16_2 Slots The PCI Express x16 slots are used to install an external PCI Express graphics card that is fully compliant to the PCI Express Base Specification revision 2.0. For CrossFire™ information please refer to Chapter 5.

PCIE1~2 Slots The PCI Express x1 slots are fully compliant to the PCI Express Base Specification revision 1.1.

Before installing an add-on card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.

Follow these instructions to install an add-on card:

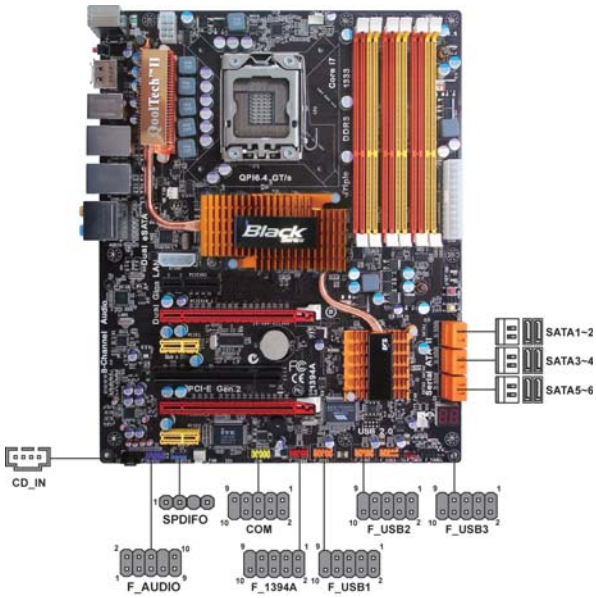
1 Remove a blanking plate from the system case corresponding to the slot you are going to use.
2 Install the edge connector of the add-on card into the expansion slot. Ensure that the edge connector is correctly seated in the slot.
3 Secure the metal bracket of the card to the system case with a screw.

1. For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.

2. The onboard PCI interface does not support 64-bit SCSI cards.

Connecting Optional Devices

Refer to the following for information on connecting the motherboard's optional devices:



F_AUDIO: Front Panel Audio header

This header allows the user to install auxiliary front-oriented microphone and line-out ports for easier access.

Pin	Signal Name	Pin	Signal Name
1	PORT 1L	2	AUD_GND
3	PORT 1R	4	PRESENCE#
5	PORT 2R	6	SENSE1_RETURN
7	SENSE_SEND	8	KEY
9	PORT 2L	10	SENSE2_RETURN

SATA1~6: Serial ATA connectors

These connectors are use to support the Serial ATA devices for the highest data transfer rates (3.0 Gb/s), simpler disk drive cabling and easier PC assembly. It eliminates limitations of the current Parallel ATA interface. But maintains register compatibility and software compatibility with Parallel ATA.

Pin	Signal Name	Pin	Signal Name
1	Ground	2	TX+
3	TX-	4	Ground
5	RX-	6	RX+
7	Ground	-	-

F_USB1~3: Front Panel USB headers

The motherboard has six USB ports installed on the rear edge I/O port array. Additionally, some computer cases have USB ports at the front of the case. If you have this kind of case, use auxiliary USB connector to connect the front-mounted ports to the motherboard.

Pin	Signal Name	Function
1	USBPWR	Front Panel USB Power
2	USBPWR	Front Panel USB Power
3	USB_FP_P0-	USB Port 0 Negative Signal
4	USB_FP_P1-	USB Port 1 Negative Signal
5	USB_FP_P0+	USB Port 0 Positive Signal
6	USB_FP_P1+	USB Port 1 Positive Signal
7	GND	Ground
8	GND	Ground
9	Key	No pin
10	USB_FP_OC0	Overcurrent signal

Please make sure that the USB cable has the same pin assignment as indicated above. A different pin assignment may cause damage or system hang-up.

CD_IN: Analog Audio Input connector

Pin	Signal Name	Function
1	CD_L	CD In left channel
2	GND	Ground
3	GND	Ground
4	CD_R	CD In right channel

SPDIFO: SPDIF out header

This is an optional header that provides an SPDIFO (Sony/Philips Digital Interface) output to digital multimedia device through optical fiber or coaxial connector.

Pin	Signal Name
1	SPDIFOUT
2	+5V
3	Key
4	GND

COM: Onboard serial port header

Connect a serial port extension bracket to this header to add a second serial port to your system.

Pin	Signal Name	Function
1	DCDB	Data carry detect
2	NSINB	Serial Data In
3	NSOUTB	Serial Data Out
4	DTRB	Data terminal ready
5	GND	Ground
6	DSRB	Date set ready
7	RTSB	Request to send
8	CTSB	Clear to send
9	RI	Ring Indicator
10	Key	No pin

F_1394A: Onboard IEEE 1394a header

Connect this header to any device with IEEE 1394a interface.

Pin	Signal Name	Pin	Signal Name
1	TPA+	2	TPA-
3	GND	4	GND
5	TPB+	6	TPB-
7	Cable-Power	8	Cable-Power
9	KeyPin	10	GND

Installing a Hard Disk Drive/CD-ROM/SATA Hard Drive

This section describes how to install IDE devices such as a hard disk drive and a CD-ROM drive.

About SATA Connectors

Your motherboard features six SATA connectors supporting a total of six drives. SATA refers to Serial ATA (Advanced Technology Attachment) is the standard interface for the IDE hard drives which are currently used in most PCs. These connectors are well designed and will only fit in one orientation. Locate the SATA connectors on the motherboard and follow the illustration below to install the SATA hard drives.

Installing Serial ATA Hard Drives

To install the Serial ATA (SATA) hard drives, use the SATA cable that supports the Serial ATA protocol. This SATA cable comes with a SATA power cable. You can connect either end of the SATA cable to the SATA hard drive or the connector on the motherboard.

SATA cable (optional)

SATA power cable (optional)

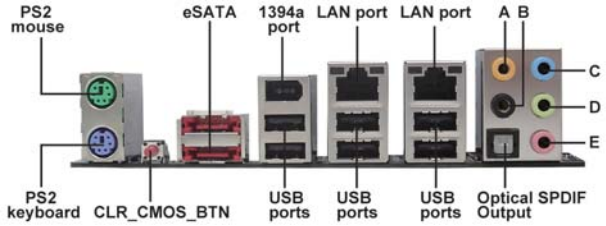
Refer to the illustration below for proper installation:

1. Attach either cable end to the connector on the motherboard.
2. Attach the other cable end to the SATA hard drive.
3. Attach the SATA power cable to the SATA hard drive and connect the other end to the power supply.

This motherboard supports the "Hot-Plug" function.

Connecting I/O Devices

The backplane of the motherboard has the following I/O ports:



PS2 Mouse Use the upper PS/2 port to connect a PS/2 pointing device.

PS2 Keyboard Use the lower PS/2 port to connect a PS/2 keyboard.

CLR_CMOS Button Use the CLR_CMOS button to clear CMOS.

eSATA Ports Use these ports to connect to external SATA boxes or Serial ATA port multipliers.

Before connecting the eSATA cables, make sure to turn off the power of the external enclosure.

1394a Port Use the 1394a port to connect to any firewire device.

LAN Ports Connect an RJ-45 jack to the LAN port to connect your computer to the Network.

USB Ports Use the USB ports to connect USB devices.

Optical SPDIF Output This jack connects to external optical digital audio output devices.

Audio Ports Use the audio jacks to connect audio devices. The C port is for stereo line-in signal, while the E port is for microphone in signal. This motherboard supports audio devices that correspond to the A, B, and D port respectively. In addition, both of the 2 ports, B, and D provide users with both right & left channels individually. Users please refer to the following note for specific port function definition.

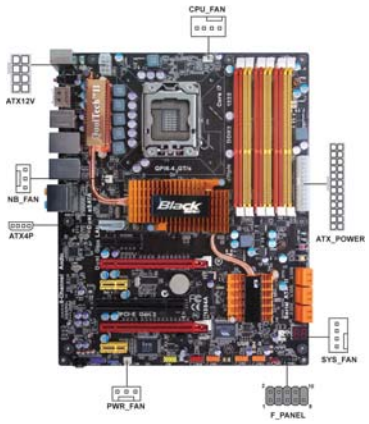
A: Center & Woofer	D: Front Out
B: Back Surround	E: Mic_in Rear
C: Line-in	-

The above port definition can be changed to audio input or audio output by changing the driver utility setting.

Connecting Case Components

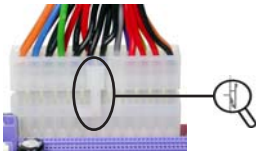
After you have installed the motherboard into a case, you can begin connecting the motherboard components. Refer to the following:

1 Connect the CPU cooling fan cable to **CPU_FAN**.
2 Connect the system cooling fan connector to **SYS_FAN**.
3 Connect the northbridge cooling fan connector to **NB_FAN**.
4 Connect the power cooling fan connector to **PWR_FAN**.
5 Connect the case switches and indicator LEDs to the **F_PANEL**.
6 Connect the standard power supply connector to **ATX_POWER**.
7 Connect the connector for graphics interface to **ATX4P**.
8 Connect the auxiliary case power supply connector to **ATX12V**.



1. Connecting 24-pin power cable

The ATX 24-pin connector allows you to connect to ATX v2.x power supply.

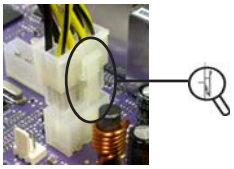


With ATX v2.x power supply, users please note that when installing 24-pin power cable, the latches of power cable and the ATX_POWER match perfectly.

24-pin power cable

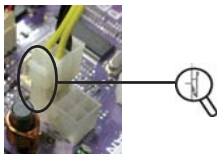
2. Connecting 8/4-pin power cable

Users please note that the 8-pin and 4-pin power cables can both be connected to the ATX12V connector.



When installing 8-pin power cable, the latches of power cable and the ATX12V connector match perfectly.

8-pin power cable



When installing 4-pin power cable, the latch falls on the left side of the ATX12V connector.

4-pin power cable

CPU_FAN/SYS_FAN: FAN Power Connector

Pin	Signal Name	Function
1	GND	System Ground
2	+12V	Power +12V
3	Sense	Sensor
4	PWM	PWM

Users please note that the fan connector supports the CPU cooling fan of 1.1A ~ 2.2A (26.4W max) at +12V.

PWR_FAN/NB_FAN: FAN Power Connector

Pin	Signal Name	Function
1	GND	System Ground
2	+12V	Power +12V
3	Sense	Sensor

ATX_ POWER: ATX 24-pin Power Connector

Pin	Signal Name	Pin	Signal Name
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	Ground	15	Ground
4	+5V	16	PS_ON
5	Ground	17	Ground
6	+5V	18	Ground
7	Ground	19	Ground
8	PWRGD	20	-5V
9	+5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	Ground

ATX12V: ATX 12V Power Connector

Pin	Signal Name	Pin	Signal Name
1	Ground	5	+12V
2	Ground	6	+12V
3	Ground	7	+12V
4	Ground	8	+12V

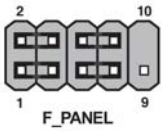
ATX4P: Auxliary Power Connector for Graphics Interface

Pin	Signal Name
1	NC
2	GND
3	GND
4	+12V

Make sure to connect a 4-pin ATX power cable to ATX4P; otherwise, the system will be unstable.

Front Panel Header

The front panel header (F_PANEL) provides a standard set of switch and LED headers commonly found on ATX or Micro ATX cases. Refer to the table below for information:



Pin	Signal	Function	Pin	Signal	Function
1	HD_LED_P	Hard disk LED(+)	2	FP PWR/SLP	*MSG LED(+)
3	HD_LED_N	Hard disk LED(-)	4	FP PWR/SLP	*MSG LED(-)
5	RST_SW_N	Reset Switch(-)	6	PWR_SW_P	Power Switch(+)
7	RST_SW_P	Reset Switch(+)	8	PWR_SW_N	Power Switch(-)
9	RSVD	Reserved	10	Key	No pin

***** *MSG LED (dual color or single color)*

Hard Drive Activity LED

Connecting pins 1 and 3 to a front panel mounted LED provides visual indication that data is being read from or written to the hard drive. For the LED to function properly, an IDE drive should be connected to the onboard IDE interface. The LED will also show activity for devices connected to the SCSI (hard drive activity LED) connector.

Power/Sleep/Message waiting LED

Connecting pins 2 and 4 to a single or dual-color, front panel mounted LED provides power on/off, sleep, and message waiting indication.

Reset Switch

Supporting the reset function requires connecting pin 5 and 7 to a momentary-contact switch that is normally open. When the switch is closed, the board resets and runs POST.

Power Switch

Supporting the power on/off function requires connecting pins 6 and 8 to a momentary-contact switch that is normally open. The switch should maintain contact for at least 50 ms to signal the power supply to switch on or off. The time requirement is due to internal de-bounce circuitry. After receiving a power on/off signal, at least two seconds elapses before the power supply recognizes another on/off signal.

This concludes Chapter 2. The next chapter covers the BIOS.

Chapter 3

Using BIOS

About the Setup Utility

The computer uses the latest "American Megatrends Inc." BIOS with support for Windows Plug and Play. The CMOS chip on the motherboard contains the ROM setup instructions for configuring the motherboard BIOS.

The BIOS (Basic Input and Output System) Setup Utility displays the system's configuration status and provides you with options to set system parameters. The parameters are stored in battery-backed-up CMOS RAM that saves this information when the power is turned off. When the system is turned back on, the system is configured with the values you stored in CMOS.

The BIOS Setup Utility enables you to configure:

- Hard drives, diskette drives and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power Management features

The settings made in the Setup Utility affect how the computer performs. Before using the Setup Utility, ensure that you understand the Setup Utility options.

This chapter provides explanations for Setup Utility options.

The Standard Configuration

A standard configuration has already been set in the Setup Utility. However, we recommend that you read this chapter in case you need to make any changes in the future.

This Setup Utility should be used:

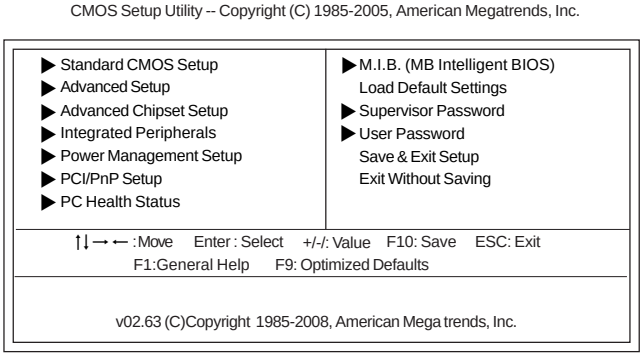
- when changing the system configuration
- when a configuration error is detected and you are prompted to make changes to the Setup Utility
- when trying to resolve IRQ conflicts
- when making changes to the Power Management configuration
- when changing the password or making other changes to the Security Setup

Entering the Setup Utility

When you power on the system, BIOS enters the Power-On Self Test (POST) routines. POST is a series of built-in diagnostics performed by the BIOS. After the POST routines are completed, the following message appears:

Press DEL to enter SETUP

Press the delete key to access the BIOS Setup Utility.


CMOS Setup Utility -- Copyright (C) 1985-2005, American Megatrends, Inc.
▶ Standard CMOS Setup
▶ Advanced Setup
▶ Advanced Chipset Setup
▶ Integrated Peripherals
▶ Power Management Setup
▶ PCI/PnP Setup
▶ PC Health Status
▶ M.I.B. (MB Intelligent BIOS)
Load Default Settings
▶ Supervisor Password
▶ User Password
Save & Exit Setup
Exit Without Saving
↑↓→← :Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults
v02.63 (C)Copyright 1985-2008, American Mega trends, Inc.

Using BIOS

When you start the Setup Utility, the main menu appears. The main menu of the Setup Utility displays a list of the options that are available. A highlight indicates which option is currently selected. Use the cursor arrow keys to move the highlight to other options. When an option is highlighted, execute the option by pressing <Enter>.

Some options lead to pop-up dialog boxes that prompt you to verify that you wish to execute that option. Other options lead to dialog boxes that prompt you for information.

Some options (marked with a triangle ▶) lead to submenus that enable you to change the values for the option. Use the cursor arrow keys to scroll through the items in the submenu.

In this manual, default values are enclosed in parenthesis. Submenu items are denoted by a triangle ▶.

The default BIOS setting for this motherboard apply for most conditions with optimum performance. We do not suggest users change the default values in the BIOS setup and take no responsibility to any damage caused by changing the BIOS settings.

BIOS Navigation Keys

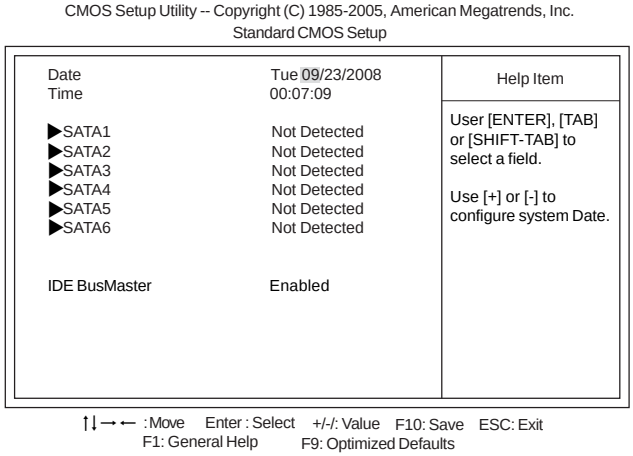
The BIOS navigation keys are listed below:

KEY	FUNCTION
ESC	Exits the current menu
↑↓→←	Scrolls through the items on a menu
+/-/PU/PD	Modifies the selected field's values
Enter	Select
F9	Loads an optimized setting for better performance
F10	Saves the current configuration and exits setup
F1	Displays a screen that describes all key functions

For the purpose of better product maintenance, we reserve the right to change the BIOS items presented in the manual. The BIOS setup screens shown in this chapter are for reference only. Please visit our website for updated manual.

Standard CMOS Setup

This option displays basic information about your system.

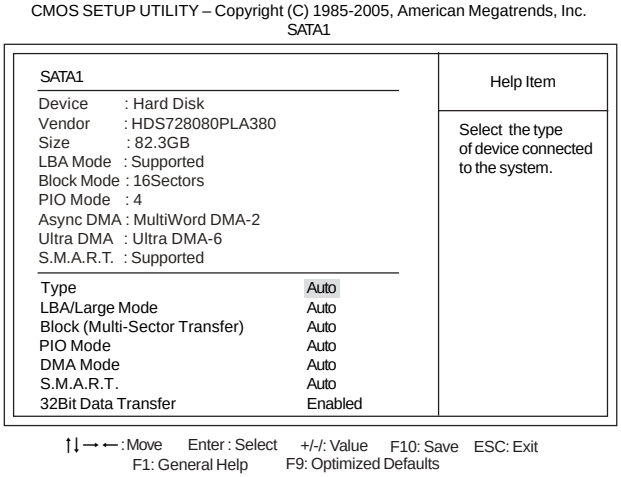


Date & Time

The Date and Time items show the current date and time on the computer. If you are running a Windows OS, these items are automatically updated whenever you make changes to the Windows Date and Time Properties utility.

▶SATA 1~6

This motherboard supports six SATA channels and each channel allows one SATA device to be installed. Use these items to configure each device on the SATA channel.


CMOS SETUP UTILITY – Copyright (C) 1985-2005, American Megatrends, Inc.
SATA1
SATA1
Device : Hard Disk
Vendor : HDS728080PLA380
Size : 82.3GB
LBA Mode : Supported
Block Mode : 16Sectors
PIO Mode : 4
Async DMA : MultiWord DMA-2
Ultra DMA : Ultra DMA-6
S.M.A.R.T. : Supported
Type Auto
LBA/Large Mode Auto
Block (Multi-Sector Transfer) Auto
PIO Mode Auto
DMA Mode Auto
S.M.A.R.T. Auto
32Bit Data Transfer Enabled
Help Item
Select the type of device connected to the system.
↑↓→←: Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1: General Help F9: Optimized Defaults

Type (Auto)

Use this item to configure the type of the IDE device that you specify. If the feature is enabled, it will enhance hard disk performance by reading or writing more data during each transfer.

LBA/Large Mode (Auto)

Use this item to set the LAB/Large mode to enhance hard disk performance by optimizing the area the hard disk is visited each time.

Block (Multi-Sector Transfer) (Auto)

If the feature is enabled, it will enhance hard disk performance by reading or writing more data during each transfer.

PIO Mode (Auto)

Use this item to set the PIO mode to enhance hard disk performance by optimizing the hard disk timing.

DMA Mode (Auto)

DMA capability allows user to improve the transfer-speed and data-integrity for compatible IDE devices.

S.M.A.R.T. (Auto)

The S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) system is a diagnostics technology that monitors and predicts device performance. S.M.A.R.T. software resides on both the disk drive and the host computer.

32Bit Data Transfer (Enabled)

Use this item to enable or disable 32 Bit Data Transfer.

Press <Esc> to return to the Standard CMOS Setup page.

IDE BusMaster (Enabled)
This item enables or disables the DMA under DOS mode. We recommend you to leave this item at the default value.

Press <Esc> to return to the main menu setting page.

Advanced Setup

This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
Advanced Setup

		Help Item
Limit CPUID MaxVal	Disabled	
Enhanced Halt (C1E)	Enabled	
Intel XD Bit	Enabled	Disabled for WindowsXP
Intel VT	Enabled	
Intel EIST	Enabled	
Intel (R) TurboMode tech	Enabled	
Turbo Ratio Limit Program	Enabled	
1-Core Ratio Limit	26	
2-Core Ratio Limit	25	
3-Core Ratio Limit	25	
4-Core Ratio Limit	25	
TDC Limit Override	Enabled	
Factory default TDC limit value	: 880	
TDC Limit value	880	
TDP Limit Override	Enabled	
Factory default TDP limit value	: 1040	
TDP Limit value	1040	
Intel (R) HT Technology	Enabled	
Intel VT-d	Disabled	
CPU Revision	C0	
Current QPI Frequency	6.400GT	
CSI Freq. auto detect	Auto	
Quick Power on Self Test	Enabled	
Boot Up Numlock Status	On	
APIC Mode	Enabled	
1st Boot Device	Hard Drive	
2nd Boot Device	CD/DVD	
3rd Boot Device	Removable Dev.	
Boot Other Device	Yes	
BIOS Protect	Disabled	

↑↓→← : Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults

Limit CPUID MaxVal (Disabled)

Use this item to enable or disable the Max CPU ID value limit.

Enhanced Halt (C1E) (Enabled)

This item enables or disables enhanced halt (C1E).

Intel XD Bit (Enabled)

This item allows users to enable or disable the Intel XD bit.

Intel VT (Enabled)

This item allows users to enable or disable the Intel Virtulization technology.

Intel EIST (Enabled)

This item allows users to enable or disable the EIST (Enhanced Intel SpeedStep technology).

Intel (R) TurboMode tech (Enabled)

This item enables or disables Intel TurboMode Technology support.

Turbo Ratio Limit Program (Enabled)

This item enables or disables Turbo Ratio Limit Program.

1/2/3/4-Core Ratio Limit (26/25/25/25)

This item shows the Core Ratio limit value.

TDC Limit Override (Enabled)

This item enables or disables TDC Limit Override.

Factory default TDC limit value (880)

This item shows the factory default TDC limit value.

TDC Limit value (880)

This item shows the TDC Limit value.

TDP Limit Override (Enabled)

This item enables or disables TDP Limit Override.

Factory default TDP limit value (1040)

This item shows the factory default TDP limit value.

Intel (R) HT Technology (Enabled)

This item enables or disables Intel HT Technology support.

Intel VT-d (Disabled)

This item enables or disables Intel VT-d support.

CPU Revision (C0)

This item shows the CPU revision.

Current QPI Frequency (4.800GT)

This item shows the current QPI (Intel® QuickPath Interconnect) frequency.

QPI Freq. auto detect (Auto)

This item is used to detect the QPI frequency automatically. If you set this item to *Disabled*, the item *QPI Frequency* will display.

Quick Power on Self Test (Enabled)

Enable this item to shorten the power on testing (POST) and have your system start up faster. You might like to enable this item after you are confident that your system hardware is operating smoothly.

Boot Up Numlock Status (On)

This item defines if the keyboard Num Lock key is active when your system is started.

APIC Mode (Enabled)

This item allows you to enable or disable the APIC (Advanced Programmable Interrupt Controller) mode. APIC provides symmetric multi-processing (SMP) for systems, allowing support for up to 60 processors.

1st/2nd/3rd Boot Device (Hard Drive/CD/DVD/Removable Dev.)

Use this item to determine the device order the computer used to look for an operating system to load at start-up time. The devices showed here will be different depending on the exact devices installed on your motherboard.

Boot Other Device (Yes)

When enabled, the system searched all other possible location for an operating system if it fails to find one in the devices specified under the First, Second and Third boot devices.

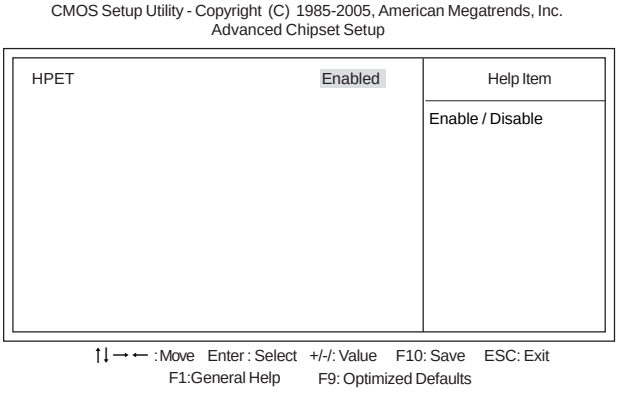
BIOS Protect (Disabled)

This item enables or disables the function of BIOS write protect.

Press <Esc> to return to the main menu setting page.

Advanced Chipset Setup

This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.


CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
Advanced Chipset Setup
HPET
Enabled
Help Item
Enable / Disable
↑↓→← :Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults

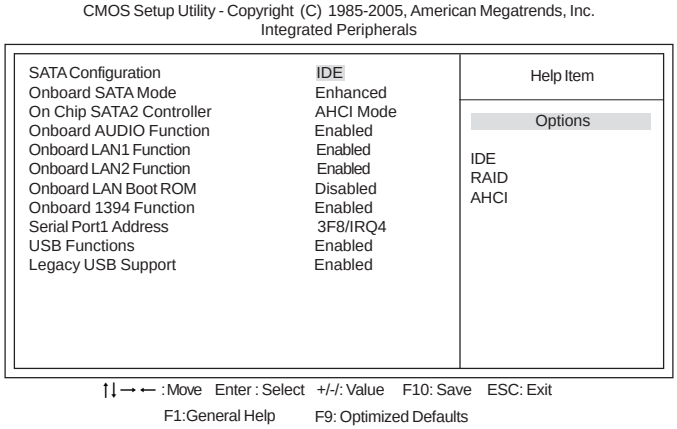
HPET (Enabled)

This item enables or disables HPET (High Precision Event Timer) support.

Press <Esc> to return to the main menu setting page.

Integrated Peripherals

This page sets up some parameters for peripheral devices connected to the system.



SATA Configuration (Enhanced)

Use this item to show the Serial ATA Configuration options: Disabled, Compatible, Enhanced.

OnBoard SATA Mode (IDE)

Use this item to select the mode of the Serial ATA.

On Chip SATA2 Controller (AHCI Mode)

This item allows you to enable or disable the onchip Serial ATA controller.

Onboard AUDIO Function (Enabled)

Use this item to enable or disable the onboard Audio function.

Onboard LAN1/2 Function (Enabled)

Use this item to enable or disable the onboard LAN function.

Onboard LAN Boot ROM (Disabled)

Use this item to enable and disable the booting from the onboard LAN or a network add-in card with a remote boot ROM installed.

Onboard 1394 Function (Enabled)

Use this item to enable or disable the onboard 1394 function.

Serial Port1 Address (3F8/IRQ4)

Use this item to enable or disable the onboard COM1 serial port, and to assign a port address.

USB Functions (Enabled)

Use this item to enable or disable the USB function.

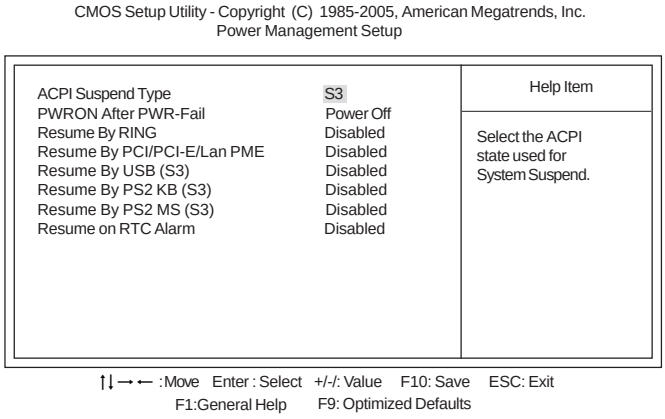
Legacy USB Support (Enabled)

Use this item to enable or disable support for legacy USB devices. Setting to Auto allows the system to detect the presence of USB device at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected, the legacy USB support is disabled.

Press <Esc> to return to the main menu setting page.

Power Management Setup

This page sets up some parameters for system power management operation.


CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
Power Management Setup
ACPI Suspend Type S3
PWRON After PWR-Fail Power Off
Resume By RING Disabled
Resume By PCI/PCI-E/Lan PME Disabled
Resume By USB (S3) Disabled
Resume By PS2 KB (S3) Disabled
Resume By PS2 MS (S3) Disabled
Resume on RTC Alarm Disabled
Help Item
Select the ACPI state used for System Suspend.
↑↓→← :Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults

ACPI Suspend Type (S3)

Use this item to define how your system suspends. In the default, S3, the suspend mode is a suspend to RAM, i.e, the system shuts down with the exception of a refresh current to the system memory.

PWRON After PWR-Fail (Power Off)

This item enables your computer to automatically restart or return to its operating status.

Resume By RING (Disabled)

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state.

Resume By PCI/PCI-E/Lan PME (Disabled)

The system can be turned off with a software command. If you enable this item, the system can automatically resume if there is an incoming call on the PCI Modem or PCI LAN card. You must use an ATX power supply in order to use this feature. Use this item to do wake-up action if inserting the PCI card.

Resume By USB (S3) (Disabled)

This item allows you to enable or disable the USB device wakeup function from S3 mode.

Resume By PS2 KB (S3) (Disabled)

This item enable or disable you to allow keyboard activity to awaken the system from power saving mode.

Resume By PS2 MS (S3) (Disabled)

This item enable or disable you to allow mouse activity to awaken the system from power saving mode.

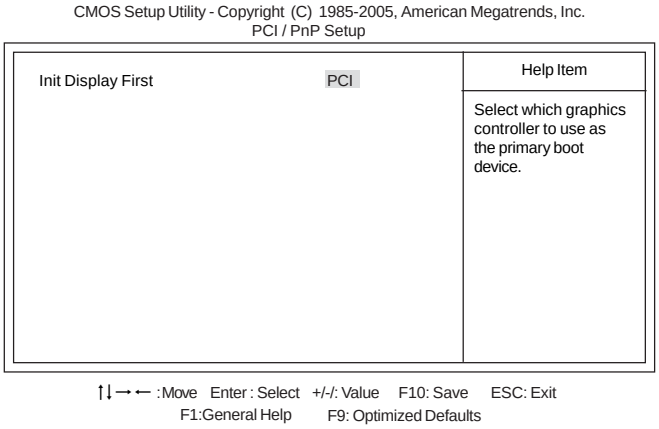
Resume on RTC Alarm (Disabled)

The system can be turned off with a software command. If you enable this item, the system can automatically resume at a fixed time based on the system's RTC (realtime clock). Use the items below this one to set the date and time of the wake-up alarm. You must use an ATX power supply in order to use this feature.

Press <Esc> to return to the main menu setting page.

PCI / PnP Setup

This page sets up some parameters for devices installed on the PCI bus and those utilizing the system plug and play capability.


CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
PCI / PnP Setup
Init Display First
PCI
Help Item
Select which graphics controller to use as the primary boot device.
↑↓→← :Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults

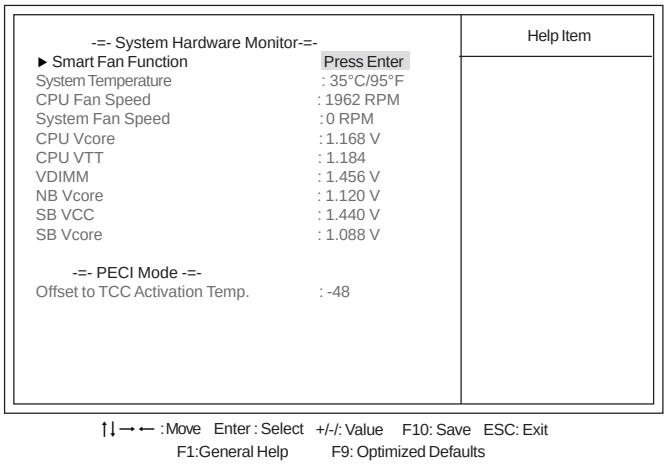
Init Display First (PCI/PCI Express)

Use this item to select which graphics controller to use as the primary boot devices.

Press <Esc> to return to the main menu setting page.

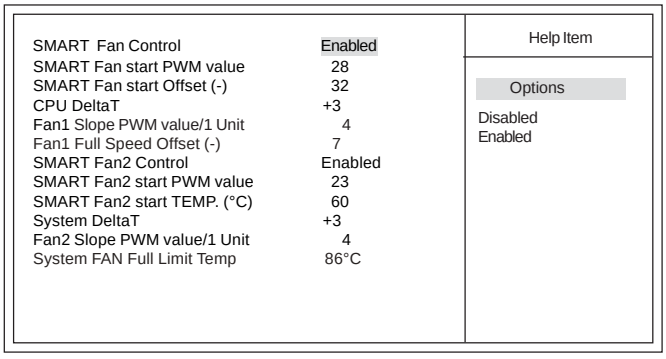
PC Health Status

This item lets you monitor the parameters for critical voltages, temperatures and fan speeds.



► Smart Fan Function

Scroll to this item and press <Enter> to view the following screen:



SMART Fan/Fan2 Control (Enabled)

These items are used to enable or disable the CPU fan speed control function. If enabled, the CPU fan runs at different speed according to the CPU temperature. You can adjust the fan speed with EasyTune based on system requirements. If disabled, CPU fan runs at full speed. (Default: Enabled)

SMART Fan/Fan2 Start PWM value (28/23)

These items are used to set the start PWM value of the CPU/SYS smart fan.

SMART Fan start Offset (-) (32)

This item is used to set the start offset of the smart fan.

CPU/System DeltaT (+3)

This item specifies the range that controls CPU/System temperature and keeps it from going so high or so low when smart fan works.

Fan1/2 Slope PWM value/1 Unit (4)

This item is used to set the Slope Select PWM of the fan.

Fan1 Full Speed Offset (-) (7)

This item is used to set the full speed offset of the fan.

SMART Fan2 start TEMP. (°C) (60)

This item is used to set the start temperature of the smart fan.

System FAN Full Limit Temp (86°C)

This item is used to set the full limit temperature of the system fan.

Press <Esc> to return to the PC Health Status page.

System Component Characteristics

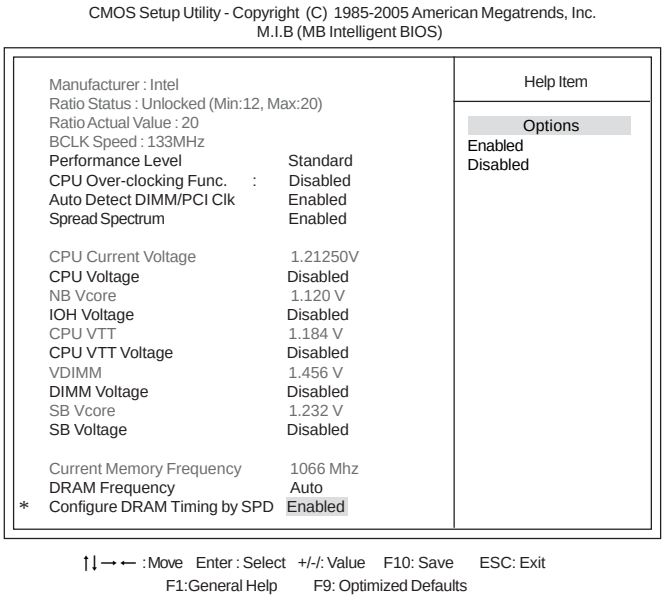
These items display the monitoring of the overall inboard hardware health events, such as System & CPU temperature, CPU & DIMM voltage, CPU & system fan speed,...etc.

- System Temperature
- CPU/System Fan Speed
- CPU Vcore
- CPU VTT
- VDIMM
- NB Vcore
- SB VCC
- SB Vcore

Press <Esc> to return to the main menu setting page.

M.I.B (MB Intelligent BIOS)

This page enables you to set the clock speed and system bus for your system. The clock speed and system bus are determined by the kind of processor you have installed in your system.


CMOS Setup Utility - Copyright (C) 1985-2005 American Megatrends, Inc.
M.I.B (MB Intelligent BIOS)
Manufacturer : Intel
Ratio Status : Unlocked (Min:12, Max:20)
Ratio Actual Value : 20
BCLK Speed : 133MHz
Performance Level Standard
CPU Over-clocking Func. : Disabled
Auto Detect DIMM/PCI Clk Enabled
Spread Spectrum Enabled
CPU Current Voltage 1.21250V
CPU Voltage Disabled
NB Vcore 1.120 V
IOH Voltage Disabled
CPU VTT 1.184 V
CPU VTT Voltage Disabled
VDIMM 1.456 V
DIMM Voltage Disabled
SB Vcore 1.232 V
SB Voltage Disabled
Current Memory Frequency 1066 Mhz
DRAM Frequency Auto
* Configure DRAM Timing by SPD Enabled
Help Item
Options
Enabled
Disabled
↑↓→← :Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults

Manufacturer (Intel)

This item displays the information of current manufacturer of the CPU installed in your computer.

Ratio Status/Ratio Actual Value

These items show the Locked ratio status and the actual ratio of the CPU installed in your system.

BCLK Speed (133MHz)

This item shows the speed of BCLK.

Performance Level (Standard)

If the item is set to *Standard*, the system will run at its basic performance level. If the item is set to *Enhanced*, the system will run at its good performance level and enable overclocking function.

CPU Over-clocking Func. (Disabled)

This item decides the CPU over-clocking function installed in your system.

Auto Detect DIMM/PCI Clk (Enabled)

When this item is enabled, BIOS will disable the clock signal of free DIMM/PCI slots.

Spread Spectrum (Enabled)

If you enable spread spectrum, it can significantly reduce the EMI (Electro-Magnetic Interference) generated by the system.

CPU Current Voltage (1.21250V)

This item allows users to adjust the CPU current voltage.

CPU Voltage (Disabled)

This item allows users to adjust the CPU voltage.

NB Vcore (1.120 V)

This item shows the Northbridge Vcore.

IOH Voltage (Disabled)

This item allows users to adjust the IOH voltage.

CPU VTT (1.184 V)

This item shows the CPU VTT.

CPU VTT Voltage (Disabled)

This item allows users to adjust the CPU VTT voltage.

VDIMM (1.456 V)

This item shows the VDIMM.

DIMM Voltage (Disabled)

This item allows users to adjust the DIMM voltage.

Warning: Since the manual adjustment to the DIMM setting may result in the instability of the system, users need adjust it carefully when over-clocking.

SB Vcore (1.232 V)

This item shows the Southbridge Vcore.

SB Voltage (Disabled)

This item allows users to adjust the Southbridge voltage.

Current Memory Frequency (1066 MHz)

This item shows the current memory frequency.

DRAM Frequency (Auto)

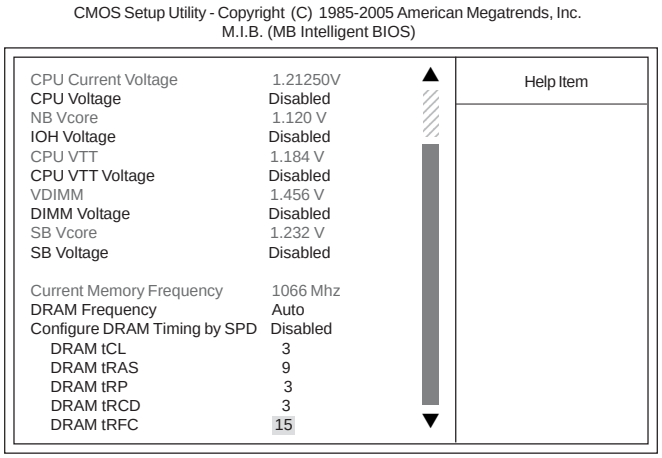
This item allows users to adjust the DRAM frequency.

Configure DRAM Timing by SPD (Enabled)

When this item is set to enable, the DDR timing is configured using SPD. SPD (Serial Presence Detect) is located on the memory modules, BIOS reads information coded in SPD during system boot up.

Press <Esc> to return to the main menu setting page.

* When users disable the item *Configure DRAM Timing by SPD*, the following picture will show.


CMOS Setup Utility - Copyright (C) 1985-2005 American Megatrends, Inc.
M.I.B. (MB Intelligent BIOS)
CPU Current Voltage 1.21250V
CPU Voltage Disabled
NB Vcore 1.120 V
IOH Voltage Disabled
CPU VTT 1.184 V
CPU VTT Voltage Disabled
VDIMM 1.456 V
DIMM Voltage Disabled
SB Vcore 1.232 V
SB Voltage Disabled
Current Memory Frequency 1066 Mhz
DRAM Frequency Auto
Configure DRAM Timing by SPD Disabled
DRAM tCL 3
DRAM tRAS 9
DRAM tRP 3
DRAM tRCD 3
DRAM tRFC 15
Help Item
↑↓→← :Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults

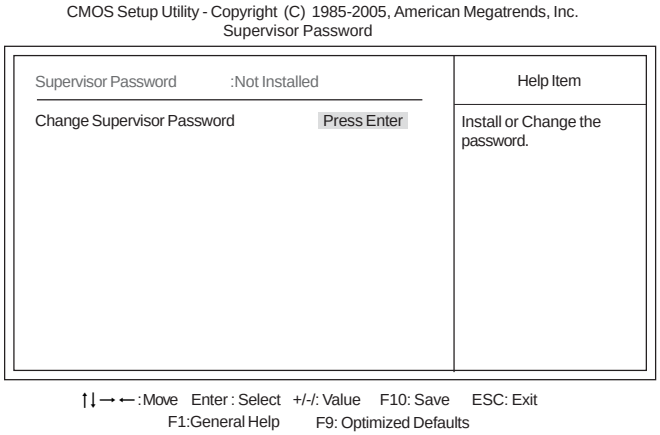
Users can adjust the values according to those labelled on the DIMM specification to improve the efficiency of the system. In principle, you need set the values of tCL *(CAS Latency Time),* tRAS *(Active to Precharge Delay),* tRP *(RAS Precharge Time) and* tRCD *(RAS to CAS Delay).*

Load Default Settings

This option opens a dialog box that lets you install stability-oriented defaults for all appropriate items in the Setup Utility. Select [OK] and then press <Enter> to install the defaults. Select [Cancel] and then press <Enter> to not install the defaults.

Supervisor Password

This page helps you install or change a password.


CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
Supervisor Password
Supervisor Password :Not Installed
Change Supervisor Password
Press Enter
Help Item
Install or Change the password.
↑↓→←:Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults

Supervisor Password (Not Installed)

This item indicates whether a supervisor password has been set. If the password has been installed, *Installed* displays. If not, *Not Installed* displays.

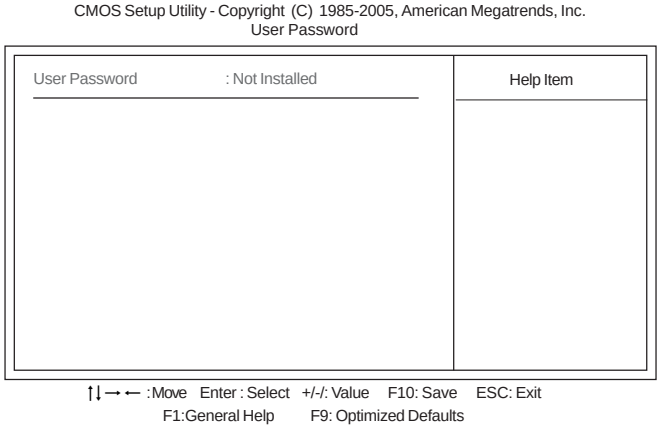
Change Supervisor Password (Press Enter)

You can select this option and press <Enter> to access the sub menu. You can use the sub menu to change the supervisor password.

Press <Esc> to return to the main menu setting page.

User Password

This page helps you install or change a password.


CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
User Password
User Password : Not Installed
Help Item
↑↓→← :Move Enter : Select +/-/: Value F10: Save ESC: Exit
F1:General Help F9: Optimized Defaults

User Password (Not Installed)

This item indicates whether a user password has been set. If the password has been installed, *Installed* displays. If not, *Not Installed* displays.

Press <Esc> to return to the main menu setting page.

Save & Exit Setup

Highlight this item and press <Enter> to save the changes that you have made in the Setup Utility and exit the Setup Utility. When the Save and Exit dialog box appears, select [OK] to save and exit, or select [Cancel] to return to the main menu.

Exit Without Saving

Highlight this item and press <Enter> to discard any changes that you have made in the Setup Utility and exit the Setup Utility. When the Exit Without Saving dialog box appears, select [OK] to discard changes and exit, or select [Cancel] to return to the main menu.

If you have made settings that you do not want to save, use the "Exit Without Saving" item and select [OK] to discard any changes you have made.

Updating the BIOS

You can download and install updated BIOS for this motherboard from the manufacturer's Web site. New BIOS provides support for new peripherals, improvements in performance, or fixes for known bugs. Install new BIOS as follows:

1. If your motherboard has a BIOS protection jumper, change the setting to allow BIOS flashing.
2. If your motherboard has an item called Firmware Write Protect in Advanced BIOS features, disable it. (Firmware Write Protect prevents BIOS from being overwritten.)
3. Prepare a bootable device or create a bootable system disk. (Refer to Windows online help for information on creating a bootable system disk.)
4. Download the Flash Utility and new BIOS file from the manufacturer's Web site. Copy these files to the bootable device.
5. Turn off your computer and insert the bootable device in your computer. (You might need to run the Setup Utility and change the the boot priority items on the Advanced BIOS Features Setup page, to force your computer to boot from the bootable device first.)
6. At the C:\ or A:\ prompt, type the Flash Utility program name and the file name of the new BIOS and then press <Enter>. Example: AMINF340.EXE040706.ROM
7. When the installation is complete, remove the bootable device from the computer and restart your computer. If your motherboard has a Flash BIOS jumper, reset the jumper to protect the newly installed BIOS from being overwritten. The computer will restart automatically.

This concludes Chapter 3. Refer to the next chapter for information on the software supplied with the motherboard.

Chapter 4

Using the Motherboard Software

About the Software CD-ROM

The support software CD-ROM that is included in the motherboard package contains all the drivers and utility programs needed to properly run the bundled products. Below you can find a brief description of each software program, and the location for your motherboard version. More information on some programs is available in a README file, located in the same directory as the software. Before installing any software, always inspect the folder for files named README.TXT, INSTALL.TXT, or something similar. These files may contain important information that is not included in this manual.

1. *Never try to install all software from folder that is not specified for use with your motherboard.*
2. *The notice of Intel HD audio installation (optional): The Intel High Definition audio functionality unexpectedly quits working in Windows Server 2003 Service Pack 1 or Windows XP Professional x64 Edition. Users need to download and install the update packages from the Microsoft Download Center "before" installing HD audio driver bundled in the Driver CD. Please log on to http://support.microsoft.com/default.aspx?scid=kb;en-us;901105#appliesto for more information.*

Auto-installing under Windows XP/Vista

The Auto-install CD-ROM makes it easy for you to install the drivers and software for your motherboard.

If the Auto-install CD-ROM does not work on your system, you can still install drivers through the file manager for your OS (for example, Windows Explorer). Refer to the Utility Folder Installation Notes later in this chapter.

The support software CD-ROM disc loads automatically under Windows XP/Vista. When you insert the CD-ROM disc in the CD-ROM drive, the autorun feature will automatically bring up the install screen. The screen has three buttons on it, Setup, Browse CD and Exit.

If the opening screen does not appear; double-click the file "setup.exe" in the root directory.

Setup Tab

Setup	Click the **Setup** button to run the software installation program. Select from the menu which software you want to install.
Browse CD	The **Browse CD** button is the standard Windows command that allows you to open Windows Explorer and show the contents of the support CD. Before installing the software from Windows Explorer, look for a file named README.TXT, INSTALL.TXT or something similar. This file may contain important information to help you install the software correctly. Some software is installed in separate folders for different operating systems, such as Windows XP/Vista. Always go to the correct folder for the kind of OS you are using. In install the software, execute a file named SETUP.EXE or INSTALL.EXE by double-clicking the file and then following the instructions on the screen.
Exit	The **EXIT** button closes the Auto Setup window.

Application Tab

Lists the software utilities that are available on the CD.

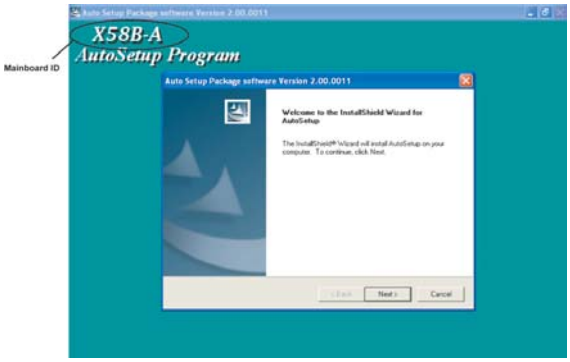
Read Me Tab

Displays the path for all software and drivers available on the CD.

Running Setup

Follow these instructions to install device drivers and software for the motherboard:

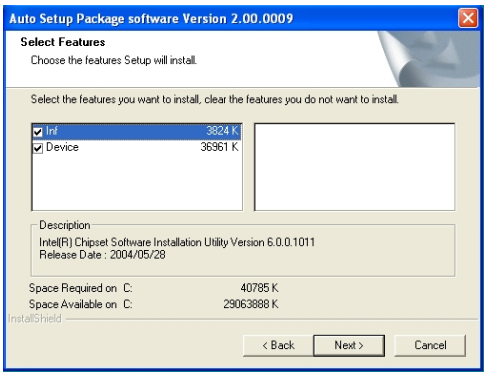
1. *Click **Setup.** The installation program begins:*



The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.

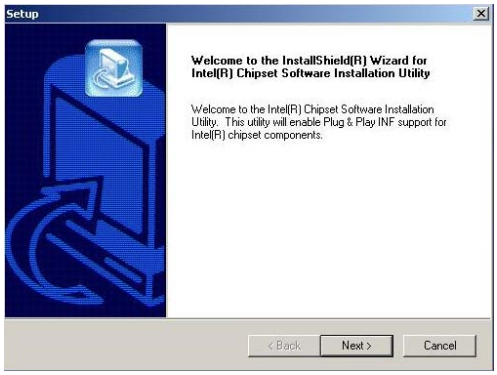
The motherboard identification is located in the upper left-hand corner.

2. *Click **Next.** The following screen appears:*


Auto Setup Package software Version 2.00.0009
Select Features
Choose the features Setup will install.
Select the features you want to install, clear the features you do not want to install.
Inf 3824 K
Device 36961 K
Description
Intel(R) Chipset Software Installation Utility Version 6.0.0.1011
Release Date : 2004/05/28
Space Required on C: 40785 K
Space Available on C: 29063888 K
InstallShield
< Back
Next >
Cancel

3. *Check the box next to the items you want to install. The default options are recommended.*

4. *Click **Next** run the Installation Wizard. An item installation screen appears:*


Setup
Welcome to the InstallShield(R) Wizard for Intel(R) Chipset Software Installation Utility
Welcome to the Intel(R) Chipset Software Installation Utility. This utility will enable Plug & Play INF support for Intel(R) chipset components.
< Back
Next >
Cancel

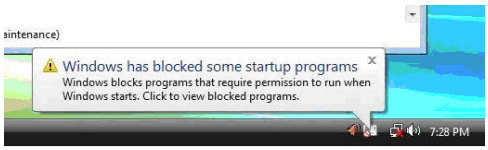
5. *Follow the instructions on the screen to install the items.*

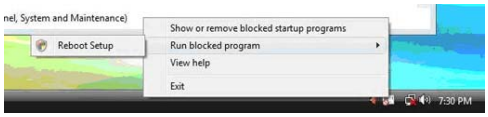
1. Drivers and software are automatically installed in sequence. Follow the onscreen instructions, confirm commands and allow the computer to restart a few times to complete the installation.

2. During the Windows Vista Driver Auto Setup Procedure, users should use one of the following two methods to install the driver after the system restart.

Method 1. Run Reboot Setup

Windows Vista will block startup programs by default when installing drivers after the system restart. You must select taskbar icon **Run Blocked Program** and run **Reboot Setup** to install the next driver, until you finish all drivers installation.


Windows has blocked some startup programs
Windows blocks programs that require permission to run when Windows starts. Click to view blocked programs.
7:28 PM



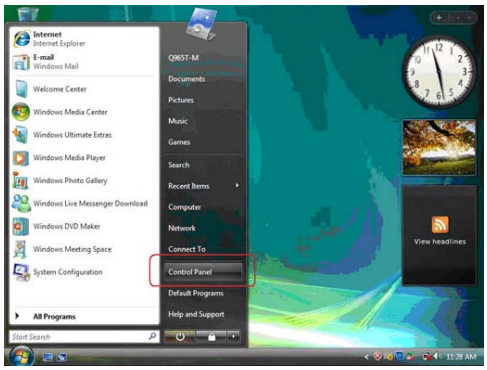
Method 2. Disable UAC (User Account Control)

* For administrator account only. Standard user account can only use Method 1.

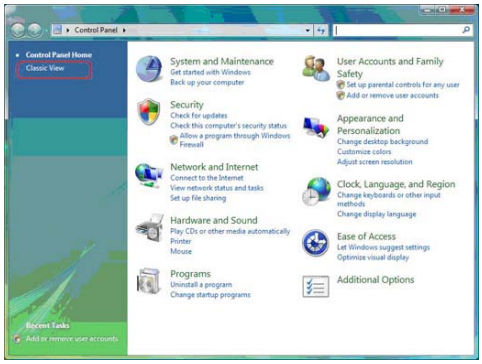
Disable Vista UAC function before installing drivers, then use CD driver to install drivers, it will continue to install drivers after system restart without running blocked programs.

Follow these instructions to Disable Vista UAC function:

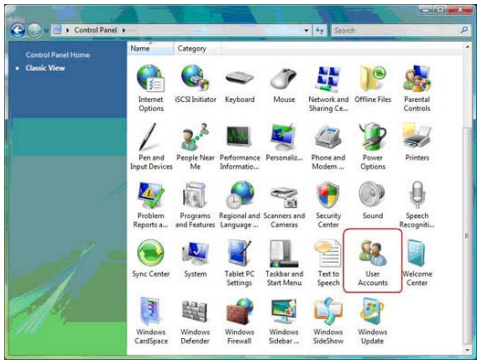
1. *Go to* ***Control Panel****.*



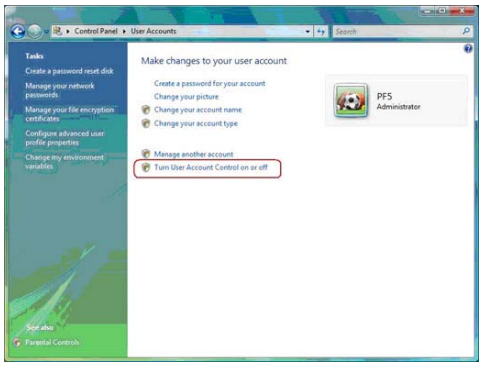
2. *Select **Classic View**.*



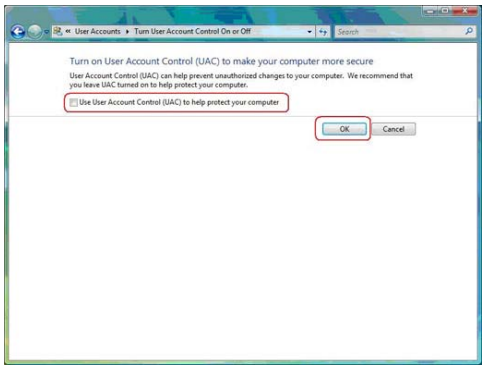
3. *Set **User Account**.*



4. *Select **Turn User Account Control on or off** and press **Continue**.*



5. *Disable* ***User Account Control (UAC) to help protect your computer*** *item and press* ***OK****, then press* ***Restart Now****. Then you can restart your computer and continue to install drivers without running blocked programs.*


User Accounts ▸ Turn User Account Control On or Off
Search
Turn on User Account Control (UAC) to make your computer more secure
User Account Control (UAC) can help prevent unauthorized changes to your computer. We recommend that you leave UAC turned on to help protect your computer.
Use User Account Control (UAC) to help protect your computer
OK
Cancel

Manual Installation

Insert the CD in the CD-ROM drive and locate the PATH.DOC file in the root directory. This file contains the information needed to locate the drivers for your motherboard.

Look for the chipset and motherboard model; then browse to the directory and path to begin installing the drivers. Most drivers have a setup program (SETUP.EXE) that automatically detects your operating system before installation. Other drivers have the setup program located in the operating system subfolder.

If the driver you want to install does not have a setup program, browse to the operating system subfolder and locate the readme text file (README.TXT or README.DOC) for information on installing the driver or software for your operating system.

Utility Software Reference

All the utility software available from this page is Windows compliant. They are provided only for the convenience of the customer. The following software is furnished under license and may only be used or copied in accordance with the terms of the license.

These software(s) are subject to change at anytime without prior notice. Please refer to the support CD for available software.

This concludes Chapter 4.

Chapter 5

ATI CrossFire™ Technology Support

This motherboard supports the ATI CrossFire™ Technology that allows you to install multi-graphics processing units (GPU) graphics cards. Follow the installation procedures in this section.

Requirements

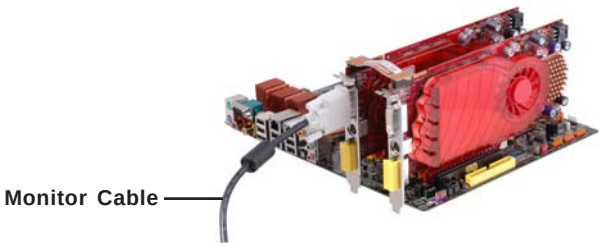
1 You should have a CrossFire™ Ready motherboard, a CrossFire™ Edition graphics card and a CrossFire™ ready graphics card.
2 You would need a Crossfire™ bridge cable.
3 Make sure that your graphics card driver supports the ATI CrossFire™ technology. Download the latest driver from the ATI website (www.ati.com).
4 Make sure that your power supply unit (PSU) can provide at least the minimum power required by your system.

Installing CrossFire™ graphics cards

1. Insert the CrossFire™ graphics cards into the **PCIEX16_1** and **PCIEX16_2** slots. Make sure that the card is properly seated on the slot.

2. Connect the two graphics cards with the CrossFire™ Bridge.

3. Connect the cable from your monitors to the CrossFire™ ready graphics card installed on the **PCIEX16_1** slot.



4. Connect an auxiliary power source from the power supply to the graphics cards.

Table A: Supported PCI Express VGA Card List for CrossFire™ Function

Vender	PCI-E Card	
ATI	MSI RX1300 TD256E (256M)	Radeon X1300Pro
	ATI X1600XT (256M)	Radeon X1600XT
	PowerColor X1900XTX (512M)	Radeon X1900XTX
	ASUS EAX1950PRO/HTDP/256M/A (256M)	Radeon X19500Pro
	MSI RX2600XT (256MB)	Radeon HD2600XT
	MSI RX3850-T2D256E-OC (256MB)	Radeon HD3850
	POWER Color AX3870 512MD-PH	Radeon HD3870

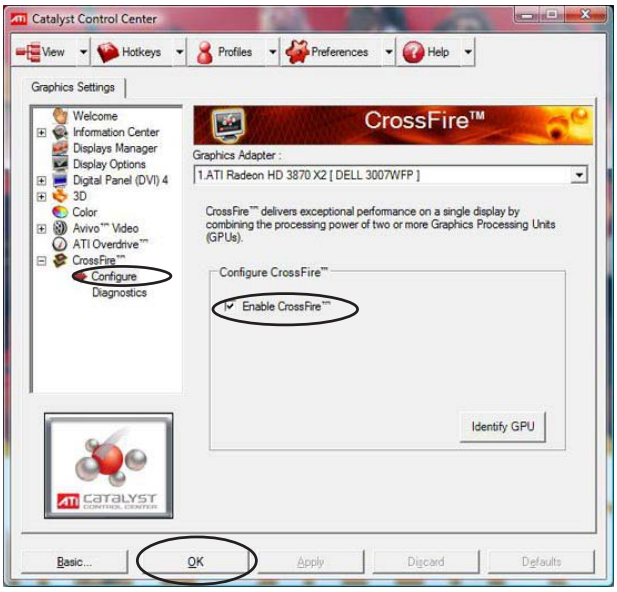
The Catalyst™ Control Center Dialog Box

View

The Catalyst™ Control Center provides two views; one is Standard view for beginners, the other is Advance view for advanced users to access and configure the complete features of the software.

To enable CrossFire™:

- Set the view to **Advance**.
- Click the CrossFire™ item in Graphics Settings.
- In the CrossFire™ Setting dialog, tick the box opposite Enable CrossFire™.
- Click **OK** to effect the setting.



Set to Advanced View to enable the CrossFire™ function.

Memo

Chapter 6
Intel® Matrix Storage Manager RAID Configurations

The Intel® Matrix Storage Manager allows you to configure RAID 0, and 1 sets on the external Serial ATA hard disk drives.

Before creating a RAID set

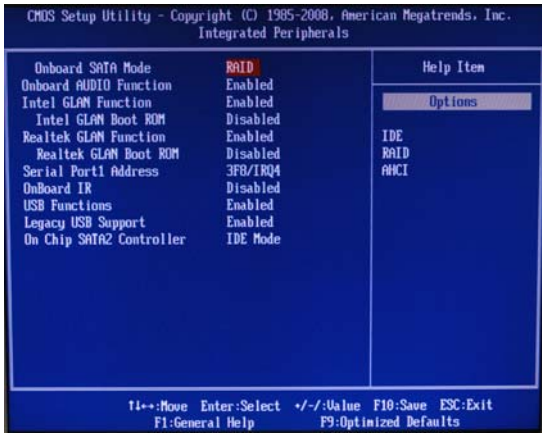
Prepare the following items:

1. One SATA HDD.
2. A write-enabled floppy disk.
3. Microsoft® Windows® OS installation disk (Windows XP/Vista).
4. Motherboard support CD with Intel® Matrix Storage Manager driver.

Complete the following steps before you create a RAID set:

1. Install the external Serial ATA hard disk drive (HDD) on your system.
2. Set the *Onboard SATA Mode* item in the BIOS to *.RAID..*

   See section “Integrated Peripherals” for details.



3. Enter the Intel® Matrix Storage Manager option to set up your RAID configuration.
4. Create an Intel® Matrix Storage Manager driver disk for Windows® OS installation. See section “Creating a RAID driver disk” for details.
5. Install the Intel® Matrix Storage Manager driver after the Windows® OS had been installed.

Entering Intel® Matrix Storage Manager RAID BIOS utility

1. During POST, press <Ctrl-I> to enter the Intel® Matrix Storage Manager RAID BIOS menu.

Intel(R) Matrix Storage Manager option ROM v7.6.0.1011 ICH9R wRAID5
Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.
RAID Volumes:
None defined.
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
4 Maxtor 7H500F0 H81D3FLH 465.8GB Non-RAID Disk
5 ST3500320AS 5QM0KLEY 465.8GB Non-RAID Disk
Press <CTRL-I> to enter Configuration Utility...

2. The main Intel® Matrix Storage Manager RAID BIOS menu appears.

3. Use the arrow keys to move the color bar and navigate through the items.

Intel(R) Matrix Storage Manager option ROM v7.6.0.1011 ICH9R wRAID5
Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.
[MAIN MENU]
1. Create RAID Volume
2. Delete RAID Volume
3. Reset Disks to Non-RAID
4. Exit
[DISK/VOLUME INFORMATION]
RAID Volumes:
None defined.
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
4 Maxtor 7H500F0 H81D3FLH 465.8GB Non-RAID Disk
5 ST3500320AS 5QM0KLEY 465.8GB Non-RAID Disk
[↑↓]-Select [ESC]-Exit [ENTER]-Select Menu

Creating a RAID set

1. In the main Intel® Matrix Storage Manager RAID BIOS menu, highlight *Create RAID Volume* using the up/down arrow key then press <Enter>.

2. When the *RAID Level* item is highlighted, use the up/down arrow key to select the RAID set that you want to create.

When more than two HDDs are installed in your computer, the *Disks* item will be selectable. Then users can select the HDD that you want to belong to the RAID set. Please be noticed that selecting a wrong disk will result in losing the original data of the HDD.

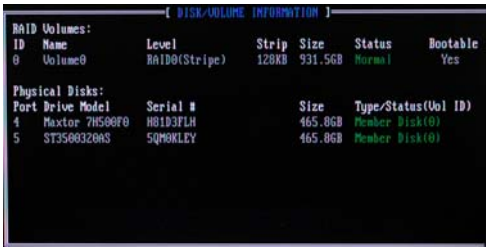
3. Key in the RAID volume capacity. Use the up/down arrow to choose the *Capacity*. The default value indicates the maximum capacity using the selected disks. Entering a lower capacity allows you to create a second volume on these disks.

4. When done, press <Enter> to confirm the creation of the RAID set. A dialogue box appears to confirm the action. Press <Y> to confirm; otherwise, press <N>.

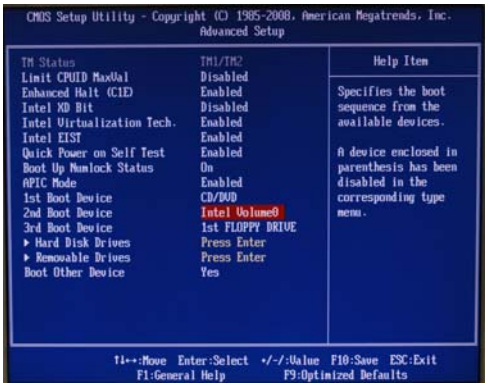
Intel(R) Matrix Storage Manager option ROM v7.6.0.1011 ICH9R wRAID5
Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.
[CREATE VOLUME MENU]
Name: Volume0
RAID Level: RAID0(Stripe)
Disks: Select Disks
Strip Size: 128KB
Capacity: 931.5 GB
WARNING: ALL DATA ON SELECTED DISKS WILL BE LOST.
Are you sure you want to create this volume? (Y/N):
Press ENTER to create the specified volume.
[↑↓]Change [TAB]-Next [ESC]-Previous Menu [ENTER]-Select

Pressing <Y> deletes all the data in the HDDs.

5. The following screen appears, displaying the relevant information about the RAID set you created.


[DISK/VOLUME INFORMATION]
RAID Volumes:
ID Name Level Strip Size Status Bootable
0 Volume0 RAID0(Stripe) 128KB 931.5GB Normal Yes
Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
4 Maxtor 7H500F0 H81D3FLH 465.8GB Member Disk(0)
5 ST3500320AS 5QM0KLEY 465.8GB Member Disk(0)

Users please be noted that RAID 0 (Stripe) is set to accelerate the data access, and RAID 1 (Mirror) is set to provide the data backup. If you want to set RAID 0, you need to set the *2nd Boot Device* item in the BIOS to *Intel Volume0*. See section "Advanced Setup" for details.


CMOS Setup Utility - Copyright (C) 1985-2008, American Megatrends, Inc.
Advanced Setup
TM Status TM1/TM2
Limit CPUID MaxVal Disabled
Enhanced Halt (C1E) Enabled
Intel XD Bit Disabled
Intel Virtualization Tech. Enabled
Intel EIST Enabled
Quick Power on Self Test Enabled
Boot Up Numlock Status On
APIC Mode Enabled
1st Boot Device CD/DVD
2nd Boot Device Intel Volume0
3rd Boot Device 1st FLOPPY DRIVE
▸ Hard Disk Drives Press Enter
▸ Removable Drives Press Enter
Boot Other Device Yes
Help Item
Specifies the boot sequence from the available devices.
A device enclosed in parenthesis has been disabled in the corresponding type menu.
↑↓←→:Move Enter:Select +/-/:Value F10:Save ESC:Exit
F1:General Help F9:Optimized Defaults

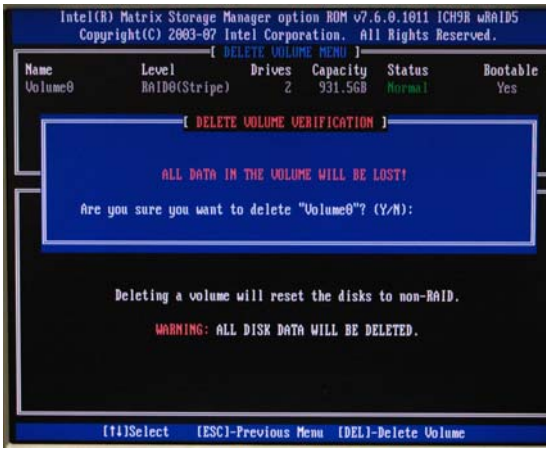
Deleting a RAID set

1. In the main Intel® Matrix Storage Manager RAID BIOS menu, highlight *Delete RAID Volume* using the up/down arrow key then press <Enter>.

2. Use the space bar to select the RAID set you want to delete.

   Press the <Del> key to delete the set.

3. A dialogue box appears to confirm the action. Press <Y> to confirm; otherwise, press <N>.


Intel(R) Matrix Storage Manager option ROM v7.6.0.1011 ICH9R wRAID5
Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.
[DELETE VOLUME MENU]
Name Level Drives Capacity Status Bootable
Volume0 RAID0(Stripe) 2 931.5GB Normal Yes
[DELETE VOLUME VERIFICATION]
ALL DATA IN THE VOLUME WILL BE LOST!
Are you sure you want to delete "Volume0"? (Y/N):
Deleting a volume will reset the disks to non-RAID.
WARNING: ALL DISK DATA WILL BE DELETED.
[↑↓]Select [ESC]-Previous Menu [DEL]-Delete Volume

Pressing <Y> deletes all the data in the HDDs.

Resetting disks to Non-RAID

An HDD that has been previously configured as part of another RAID set in another platform is called a broken RAID HDD. When you install a broken RAID HDD, you cannot select this disk when configuring a RAID set through the Intel® Matrix Storage Manager option. If you still want to use this broken RAID HDD as part of the RAID set configured through the Intel® Matrix Storage Manager, you may do so by resetting the disk to Non-RAID. You will, however, lose all data and previous RAID configurations.

To reset disks to Non-RAID:

1. In the main Intel® Matrix Storage Manager RAID BIOS menu, highlight *Reset Disks to Non-RAID* using the up/down arrow key then press <Enter>.

2. Use the space bar to select the HDD to reset to Non-RAID.
3. A dialogue box appears to confirm the action. Press <Y> to confirm; otherwise, press <N>.

Pressing <Y> deletes all the data in the HDDs.

Exiting Setup

When you have finished, highlight *Exit* using the up/down arrow key then press <Enter> to exit the Intel® Matrix Storage Manager RAID BIOS utility.

A dialogue box appears to confirm the action. Press <Y> to confirm; otherwise, press <N> to return to the Intel® Matrix Storage Manager RAID BIOS menu.

Bootblock Initialization Code Checkpoints

The Bootblock initialization code sets up the chipset, memory and other components before system memory is available. The following table describes the type of checkpoints that may occur during the bootblock initialization portion of the BIOS :

Checkpoint	Description
Before D1	Early chipset initialization is done. Early super I/O initialization is done including RTC and keyboard controller. NMI is disabled.
D1	Perform keyboard controller BAT test. Check if waking up from power management suspend state. Save power-on CPUID value in scratch CMOS.
D0	Go to flat mode with 4GB limit and GA20 enabled. Verify the bootblock checksum.
D2	Disable CACHE before memory detection. Execute full memory sizing module. Verify that flat mode is enabled.
D3	If memory sizing module not executed, start memory refresh and do memory sizing in Bootblock code. Do additional chipset initialization. Re-enable CACHE. Verify that flat mode is enabled.
D4	Test base 512KB memory. Adjust policies and cache first 8MB. Set stack.
D5	Bootblock code is copied from ROM to lower system memory and control is given to it. BIOS now executes out of RAM.
D6	Both key sequence and OEM specific method is checked to determine if BIOS recovery is forced. Main BIOS checksum is tested. If BIOS recovery is necessary, control flows to checkpoint E0. See *Bootblock Recovery Code Checkpoints* section of document for more information.
D7	Restore CPUID value back into register. The Bootblock-Runtime interface module is moved to system memory and control is given to it. Determine whether to execute serial flash.
D8	The Runtime module is uncompressed into memory. CPUID information is stored in memory.
D9	Store the Uncompressed pointer for future use in PMM. Copying Main BIOS into memory. Leaves all RAM below 1MB Read-Write including E000 and F000 shadow areas but closing SMRAM.
DA	Restore CPUID value back into register. Give control to BIOS POST (ExecutePOSTKernel). See *POST Code Checkpoints* section of document for more information.
E1-E8 EC-EE	OEM memory detection/configuration error. This range is reserved for chipset vendors & system manufacturers. The error associated with this value may be different from one platform to the next.

POST Code Checkpoints

The POST code checkpoints are the largest set of checkpoints during the BIOS pre-boot process. The following table describes the type of checkpoints that may occur during the POST portion of the BIOS :

Checkpoint	Description
03	Disable NMI, Parity, video for EGA, and DMA controllers. Initialize BIOS, POST, Runtime data area. Also initialize BIOS modules on POST entry and GPNV area. Initialized CMOS as mentioned in the Kernel Variable "wCMOSFlags."
04	Check CMOS diagnostic byte to determine if battery power is OK and CMOS checksum is OK. Verify CMOS checksum manually by reading storage area. If the CMOS checksum is bad, update CMOS with power-on default values and clear passwords. Initialize status register A. Initializes data variables that are based on CMOS setup questions. Initializes both the 8259 compatible PICs in the system
05	Initializes the interrupt controlling hardware (generally PIC) and interrupt vector table.
06	Do R/W test to CH-2 count reg. Initialize CH-0 as system timer.Install the POSTINT1Ch handler. Enable IRQ-0 in PIC for system timer interrupt. Traps INT1Ch vector to "POSTINT1ChHandlerBlock."
08	Initializes the CPU. The BAT test is being done on KBC. Program the keyboard controller command byte is being done after Auto detection of KB/MS using AMI KB-5.
C0	Early CPU Init Start -- Disable Cache - Init Local APIC
C1	Set up boot strap processor Information
C2	Set up boot strap processor for POST
C5	Enumerate and set up application processors
C6	Re-enable cache for boot strap processor
C7	Early CPU Init Exit
0A	Initializes the 8042 compatible Key Board Controller.
0B	Detects the presence of PS/2 mouse.
0C	Detects the presence of Keyboard in KBC port.
0E	Testing and initialization of different Input Devices. Also, update the Kernel Variables. Traps the INT09h vector, so that the POST INT09h handler gets control for IRQ1. Uncompress all available language, BIOS logo, and Silent logo modules.
13	Early POST initialization of chipset registers.
24	Uncompress and initialize any platform specific BIOS modules.
30	Initialize System Management Interrupt.
2A	Initializes different devices through DIM. See *DIM Code Checkpoints* section of document for more information.
2C	Initializes different devices. Detects and initializes the video adapter installed in the system that have optional ROMs.
2E	Initializes all the output devices.
31	Allocate memory for ADM module and uncompress it. Give control to ADM

	module for initialization. Initialize language and font modules for ADM. Activate ADM module.
33	Initializes the silent boot module. Set the window for displaying text information.
37	Displaying sign-on message, CPU information, setup key message, and any OEM specific information.
38	Initializes different devices through DIM. See *DIM Code Checkpoints* section of document for more information.
39	Initializes DMAC-1 & DMAC-2.
3A	Initialize RTC date/time.
3B	Test for total memory installed in the system. Also, Check for DEL or ESC keys to limit memory test. Display total memory in the system.
3C	Mid POST initialization of chipset registers.
40	Detect different devices (Parallel ports, serial ports, and coprocessor in CPU, … etc.) successfully installed in the system and update the BDA, EBDA…etc.
50	Programming the memory hole or any kind of implementation that needs an adjustment in system RAM size if needed.
52	Updates CMOS memory size from memory found in memory test. Allocates memory for Extended BIOS Data Area from base memory.
60	Initializes NUM-LOCK status and programs the KBD typematic rate.
75	Initialize Int-13 and prepare for IPL detection.
78	Initializes IPL devices controlled by BIOS and option ROMs.
7A	Initializes remaining option ROMs.
7C	Generate and write contents of ESCD in NVRam.
84	Log errors encountered during POST.
85	Display errors to the user and gets the user response for error.
87	Execute BIOS setup if needed / requested.
8C	Late POST initialization of chipset registers.
8D	Build ACPI tables (if ACPI is supported)
8E	Program the peripheral parameters. Enable/Disable NMI as selected
90	Late POST initialization of system management interrupt.
A0	Check boot password if installed.
A1	Clean-up work needed before booting to OS.
A2	Takes care of runtime image preparation for different BIOS modules. Fill the free area in F000h segment with 0FFh. Initializes the Microsoft IRQ Routing Table. Prepares the runtime language module. Disables the system configuration display if needed.
A4	Initialize runtime language module.
A7	Displays the system configuration screen if enabled. Initialize the CPU's before boot, which includes the programming of the MTRR's.
A8	Prepare CPU for OS boot including final MTRR values.
A9	Wait for user input at config display if needed.
AA	Uninstall POST INT1Ch vector and INT09h vector. Deinitializes the ADM module.
AB	Prepare BBS for Int 19 boot.
AC	End of POST initialization of chipset registers.
B1	Save system context for ACPI.
00	Passes control to OS Loader (typically INT19h).
61-70	OEM POST Error. This range is reserved for chipset vendors & system manufacturers. The error associated with this value may be different from one platform to the next.

Memo